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New Mexico District work-effort analysis computer program

By

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Open-file report

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Abstract

The computer program (CAN 2) described in this report is one of several related programs used in the New Mexico District cost-analysis system. The work-effort information used in these programs is accumulated and entered to the nearest hour on forms completed by each employee. Tabulating cards are punched directly from these forms after visual examinations for errors are made. Reports containing detailed work-effort data itemized by employee within each project and account and by account and project for each employee are prepared for both current-month and year-to-date periods by the CAN 2 computer program. An option allowing preparation of reports for a specified 3-month period is provided. The total number of hours worked on each account and project and a grand total of hours worked in the New Mexico District is computed and presented in a summary report for each period.

Work effort not chargeable directly to individual projects or accounts is considered as overhead and can be apportioned to the individual accounts and projects on the basis of the ratio of the total hours of work effort for the individual accounts or projects to the total New Mexico District work effort at the option of the user. The hours of work performed by a particular section, such as General Investigations or Surface Water, are prorated and charged to the projects or accounts within the particular section. A number of surveillance or buffer accounts are employed to account for the hours worked on special events or on those parts of large projects or accounts that require a more detailed analysis. Any part of the New Mexico District operation can be separated and analyzed in detail by establishing an appropriate buffer account.

With the exception of statements associated with word size, the computer program is written in FORTRAN IV in a relatively low and standard language level to facilitate its use on different digital computers. The program has been run only on a Control Data Corporation 6600 computer system. Central processing computer time has seldom exceeded 5 minutes on the longest year-to-date runs.

Introduction

The New Mexico District cost-analysis system includes three large and five smaller computer programs developed to provide cost and work-effort information for each account and project on a current basis. This information is needed for the management of current operations and planning of future activities in a District program. For brevity and use internally in the computer, these programs are referred to as CAN, CAN 2, CANCODE, CAN 1350, CANSAL, CANCAR, CANMIG, and CANLEG. The acronym, CAN, is derived from the words, Cost ANalysis.

The three largest and most important computer programs are CAN, CAN 2, and CANCODE. CAN, the largest and most complex computer program in the New Mexico District cost-analysis system, provides detailed cost information expressed in dollars on current month and year-to-date bases (Hiss, Trantolo and Sparks, 1971). CAN 1350, a smaller computer program written to compute the Summary of Hours by Fund and Phase report has been described previously by Hiss (1969). The CANCODE program prepares printer-plotted graphs of the percentage of total time expended on each work and location code. Reports are printed for each employee, account, project, and for the total District. With this report, the manager can determine at a glance what has been accomplished and is able to judge what changes, if any, are necessary to bring the work effort into a proper balance. Two small computer programs, CANSAL and CANCAR, are used to provide the administrative section with sorted employee salary and vehicle data. CANLEG is a small program used to prepare ledger information sorted by object code and date and then by account number and project. This information is also utilized in the administrative section of the New Mexico District. The CANMIG program is used to prepare a report containing a list of employees by grade, time in grade, and length of service in the New Mexico District. The general flow of data through the CAN 1350, CAN 2, CAN, CANCODE, and CANLEG computer programs used to prepare several of the cost-analysis reports used in the New Mexico District are diagrammed in figure 1.

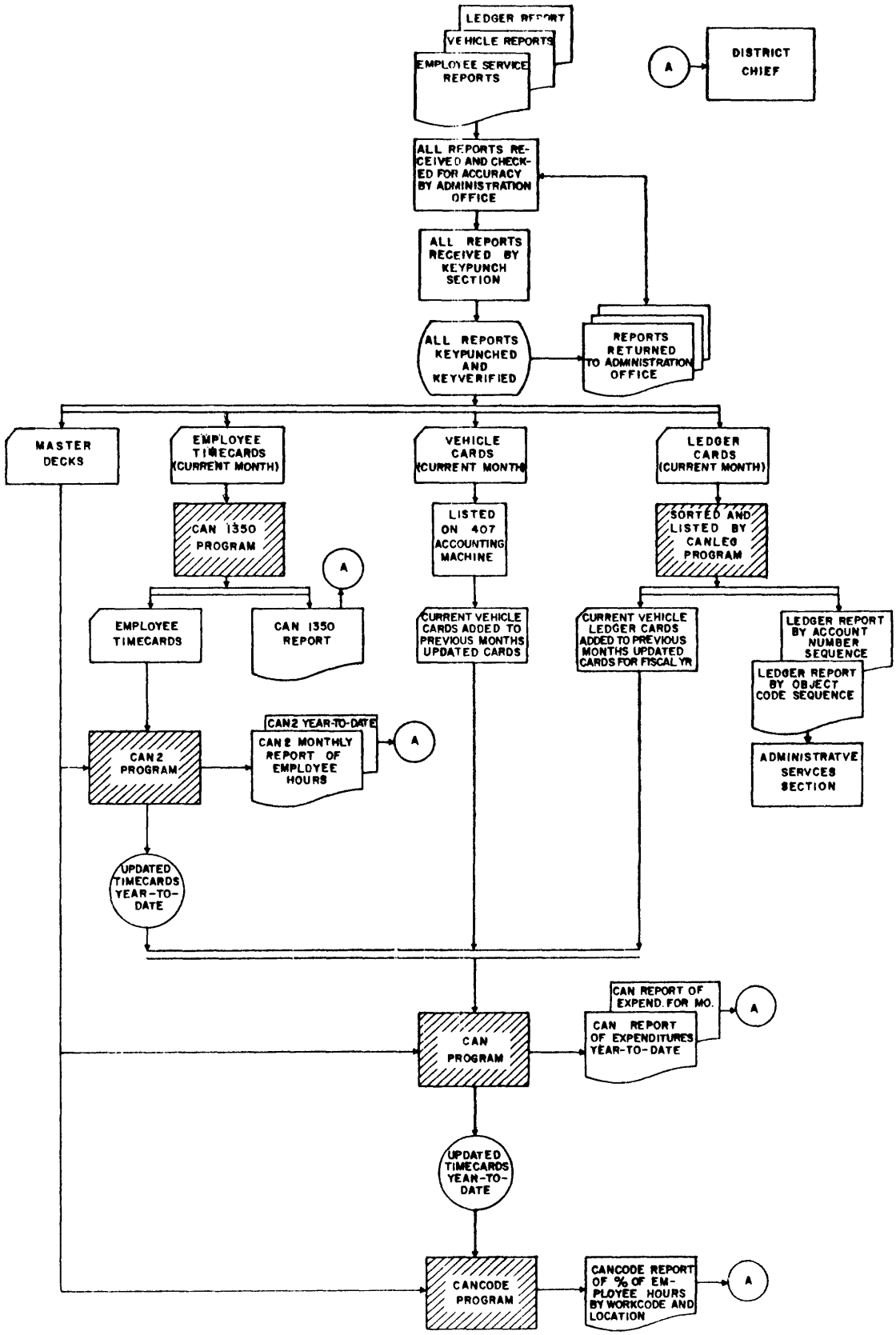

Figure 1.--General flow of data through five of the computer programs utilized in the New Mexico District cost-analysis system.

The use of the second of the principal computer programs, referred to as CAN 2, is described in this report. The CAN 2 computer program, in turn, consists of three smaller program modules referred to as SRTT, SRTR, and CANST. The acronyms, SRTT, SRTR, and CANST, are derived from sort routines called in the program modules.

Acknowledgments

The New Mexico District cost-analysis system was designed by the senior author. Mr. T. R. Ramsey wrote the first version of the CAN 2 computer program in the spring of 1968. This program was greatly revised and expanded in the fall of 1968 and modified on subsequent occasions by Mr. A. P. Trantolo. One of the sort routines used in the CAN 2 program was written by Mr. J. B. Peterson. The program module identified as CANST was developed in cooperation with the Colorado District, U.S. Geological Survey. Mr. D. R. Posson assisted the authors with final program and report preparation. Miss J. L. Sparks has been largely responsible for development of the forms and for the day-to-day operations. The authors express their gratitude for the patience and understanding shown by personnel of the New Mexico District during the development of this cost-analysis system.

Description

All information used in the computerized New Mexico District cost-analysis system is initially recorded on coding sheets from which tabulating cards are punched. Adoption of this cost-analysis system will require several changes in the normal district-level bookkeeping procedures. The employee service report forms are replaced with coding sheets to eliminate the costly and repetitive hand manipulations of data which, in addition to increasing operating costs, often result in many errors.

Hours of work chargeable only to a particular section, such as General Investigations or Surface Water, are charged to special accounts, referred to herein as the 20 accounts, such as 20GI, 20SW, 20SL, or 20CL, and then prorated to the individual projects and accounts within the particular section on the basis of the ratio of total number of hours worked on each of the individual accounts or projects to the combined work effort devoted to all of the individual accounts or projects. A number of buffer accounts are established to maintain surveillance of special events or those parts of large projects or accounts that require a more detailed analysis. Any part of the district operation can be separated and analyzed in detail by establishing an appropriate buffer account.

Work effort not chargeable to individual projects or accounts is accumulated in an overhead account (the "00" account) and printed in the summary report. It is not prorated to the individual accounts and projects as it is in the CAN program (Hiss, Trantolo and Sparks, 1971) because of District billing requirements. However, an option is provided whereby the program can be easily modified to prorate the overhead account in a manner identical to that followed in the special 20 accounts.

The CAN 2 computer program is written in FORTRAN IV with a minimum of machine-dependent language. Comment cards are inserted throughout the program to describe the statements and operations performed by the program.

The general flow of data and operational procedures followed in the CAN 2 program in the New Mexico District cost-analysis system is shown in figure 2.

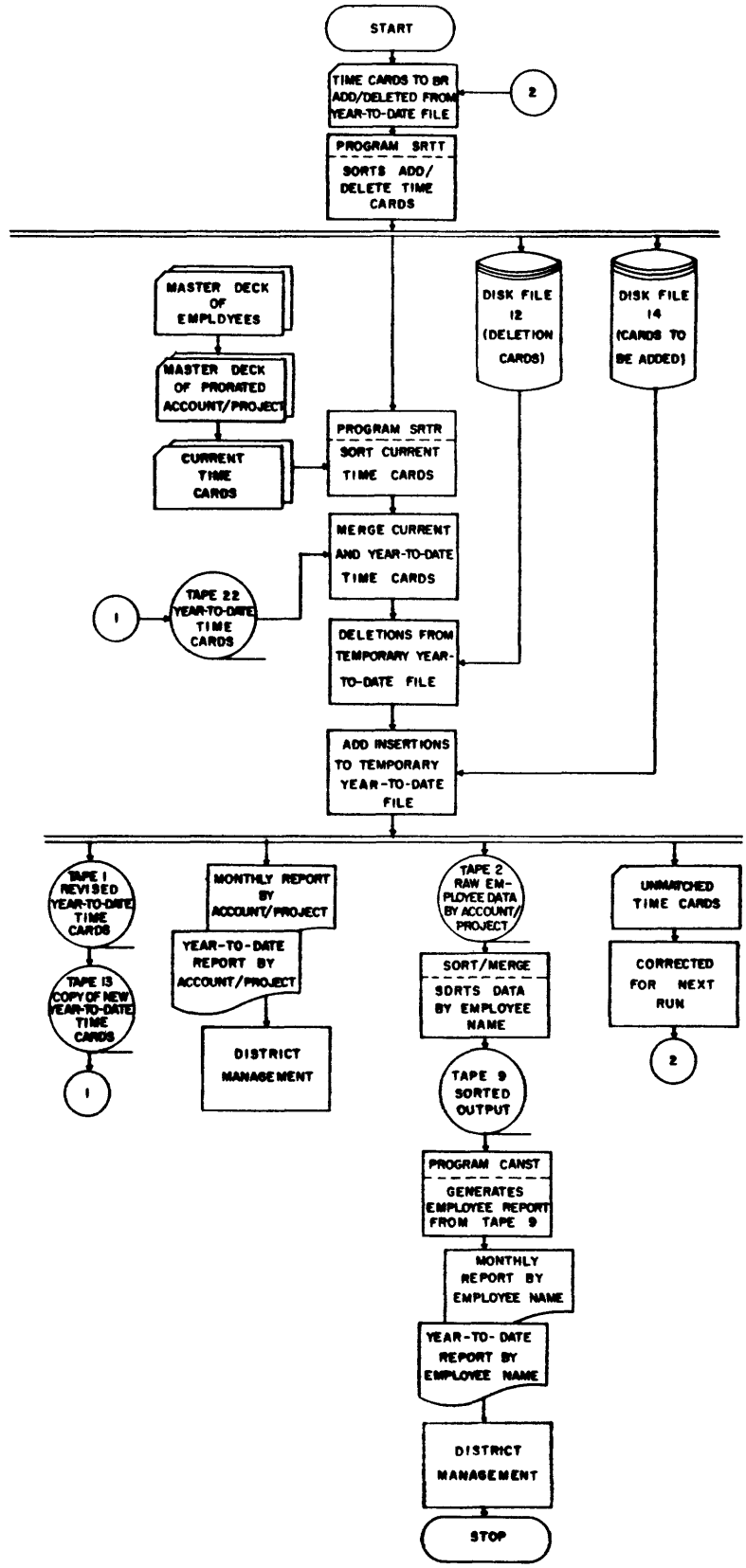

Figure 2.--Flow of data and operation of the CAN 2 computer program.

Data used in the CAN 2 program

Individuals working in the New Mexico District complete the employee service report form shown in figure 3. Information for the master files required for operation of the computer program is normally furnished by administrative personnel. However, the card decks containing this information are maintained by a computer aide in the New Mexico District who submits the computer programs and data decks to the computer center for report preparation.

Approximately 25,000 employee service report tabulating cards (time cards) are accumulated each year for a work force of 75 to 100 persons in the New Mexico District. Computer program runs become progressively larger each month because the program is written to compute one of the reports on a year-to-date basis. However, running times have seldom exceeded 5 minutes of central processor unit time on a Control Data Corporation 6600 computer system.

EMPLOYEE SERVICE REPORT

FORM 9-1348 (MOD) REVISED 7/71

*SOCIAL SECURITY NO. (1–9)	*YR. (10–11)	*MO. (12–13)	SEPTEMBER
585-20-5755	71	08	NAME Penn E. Wise

*FROM DAY (14–15)	TO DAY (16–17)	*ACCOUNT NO. (18–19) LET. (20–21)	*PROJECT NO. (22–24)	*CATEGORY (26)	*WORK TYPE (27–28)	*LOCATION (29)	*REG. HRS. (30–31)	OVER TIME (32–33)	WAE (1) (34)	*C/C (80)	REMARKS
01	02	14 I	003	C	CQ	L	07			1	
~	~	20 A	~	~	~	~	09			1	
03	05	20 SL	—	A	SW	F	06			1	
~	~	~	—	C	CO	~	~			1	
~	~	20 CL	—	~	~	~	~			1	
~	~	~	—	A	SD	~	~			1	
08	09	14 AS	002	A	RA	O	07			1	Bibliography
~	~	01	001	~	~	~	08			1	
~	10	18	~	~	~	~	08			1	
09		20 SW	—				01			1	
11		20 CL			WO	O	02			1	
~		00		I	AL	X	06			1	
12		~	—	I	OL	X	08			1	Military Leave
13		01	001	C	XX	X	00	08		1	
						TOTAL HOURS	80	08			

CODING INSTRUCTIONS:

1. When number does not fill all spaces provided, precede with zeros.
2. Indicate duplicate information with a wavy line.
3. Try to combine duplicate account/project or work codes when applicable.
4. Category "I" (indirect hours) is to be used exclusively with account "00". There is no project number for this account.
5. WAE employees - enter a "1" in column 33.
6. The "From Day" must be filled in. The "To Day" may be blank.
7. Use the "Remarks" if you wish to clarify your time.
8. Fill regular hours in with zeros when overtime is shown.

WORKCODE TABLE

Category: Data analysis	Data collection	Indirect hours	Work type		Location: Office	Field	Lab	Shop	Enroute	Visits	Other
		I	AL	Annual leave							X
A	C	I	AS	Administrative services	O	F	L	S	E	V	
	C	I	CD	Coding	O	F	L	S	E	V	
A	C	I	CF	Conferences	O	F	L	S	E	V	X
A	C	I	CM	Correspondence	O	F			E		
	C		CO	Construction		F	L	S	E	V	
A		I	CP	Computer programming	O				E	V	
A		I	CR	Colleague review	O						
A	C	I	CQ	Chemical quality	O	F	L	S	E	V	
A		I	DF	Data-file maintenance	O				E	V	
A		I	DR	Drafting	O						
A	C	I	ED	Executive direction	O				E	V	X
A	C	I	EQ	Equipment inventory	O	F	L	S	E		
A	C		GM	Geologic mapping	O	F			E	V	
A	C	I	GO	General office	O						
A	C	I	GW	Ground water	O	F	L	S	E	V	
	C		IN	Instrumentation	O	F	L	S	E	V	
	C	I	KP	Keypunching	O						
A	C	I	LS	Literature search	O				E	V	
	C	I	MA	Maintenance	O	F	L	S	E		
		I	OL	Other leave							X
A	C	I	PL	Planning	O	F	L	S	E	V	X
A		I	RA	Reports - author	O				E	V	
	C		RE	Repair of equipment		F	L	S	E		
A		I	RO	Reports - others	O				E	V	
A		I	RP	Reproduction	O				E		X
A	C	I	SD	Sediment quality	O	F	L	S	E	V	
		I	SL	Sick leave							X
A	C	I	SU	Supervision	O	F	L	S	E	V	X
A	C	I	SW	Surface water	O	F	L	S	E	V	
A	C	I	TN	Training	O	F	L	S	E	V	
		I	VC	Vehicle care	O	F			E		
A	C	I	WO	Wash & Reg requests	O	F	L	S	E	V	X
A	C	I	WU	Water use	O	F			E	V	
A	C	I	XX	Other	O	F	L	S	E	V	X

ACCOUNT - PROJECT TABLE

Account Number	Project Number	Description
01,02,06,07, 14AL,14C,14P, 14SI,15,16, 17,18,20LL,32	001	Basic Records-Streamflow
01,14S	002	Ob well, pumpage, irr acre
01,11,12,13, 14I,14M,14P, 14S,20A,21,32	003	Basic Records-Chem Qual
01,13,14I, 14P,18,20A	004	Basic Records-Sed Qual
01	085	Benchmark Stations (Photo)
01	086	Water Use
01	090	Misc Tech Inquiries & Proj
15	091	Crest Stage Gages
20PS	096	Administrative Services
25	099	Library
14R	100	Rio Grande Commission
14S	101	State Eng.-Misc. Acct.
14S	102	Special GW Problems
14S	103	Roswell Basin Quantitative
14S	104	Gila River
14SS	104	Gila Special
14S	105	NM District Data Bank
14P	106	Misc Reach Studies
14P	107	Malaga Bend Eval.
14M	108	Misc School of Mines
24	109	White Sands WL & pumpage
28	110	NM Det. Eff.-Hydro.Envir.
19	111	SCS-Trap Efficiency
20MI	112	Los Alamos-Waste Disposal
20MI	113	Los Alamos-Water Supply
14S	200	Capitan Reef
14S	201	Northern High Plains
14S	202	River Basin Analysis
15	203	NM State Hwy (Water Sheds)
14SM	204	Harding County
20MI	205	Mountain Homes
14S	206	Grant Co.
20MI	207	Gallup Study-Tohatchi
20MI	208	Pecos R-Alamogordo to Acme
14S	209	San Juan Hydrology
20MI	210	Recon. of Mimbres Basin
20MI	211	Recon. of Santa Fe County
31	300	Bur. of Rec.-State Mgt.
20MI	301	Carlsbad Caverns
20MI	302	Air Force Missile Sites
20MI	303	BIA-Mescalero
20MI	304	Fort Wingate
20MI	305	Pojoaque River
20MI	306	Fort Wingate Water Supply
24	307	WSMR-Boreholes for GW data
24	308	WSMR-Availability
CI	400	Cochiti
20HA	401	Hydrologic Atlas

00 -- General
20CL -- Chem. Lab Prorated
20CN -- CAN - Cost Accounting
20GI -- Gen. Invest. Prorated
20JH -- Jim Hudson (logging)
20SL -- Sed. Lab Prorated
20SW -- Surface Water Prorated

*Indicates data required. Other data is optional.

Figure 3.--Form used to record employee service.

Coding instructions for input data

Employee service report and card 1, the time card

Time cards, card 1, are prepared (punched) from an employee service report. The cards are used in the cost-analysis system to record hours worked on a particular project and account by an individual employee (fig. 3). Other uses of this employee service report have been previously described by Hiss (1969) and Hiss, Trantolo and Sparks (1971).

The employee service report is completed as follows:

All numbers must be right-hand justified within a specified field with leading zeros inserted where necessary.

Columns 1-9. Enter the social security number of the employee in this field.

Columns 10-11. Enter the last two digits of the calendar year.

Columns 12-13. Enter the numeric digits appropriate for the current month. For example, 01 would signify January; and 12, December.

The first 13 columns are duplicated by keypunch on all cards for the same employee and pay period.

Columns 14-15. Enter the calendar day work commenced on a particular job.

Columns 16-17. Enter the calendar day work was completed. Do not complete this field if the work was finished on the same day it was started. Whenever the type of work or projects and accounts varies daily, the work should be encoded on a daily basis to enable analysis of daily work patterns in other computer programs. If the work projects or accounts are consistent for more than one day, the number of hours can be accumulated and entered on one line as shown in figure 3. Work is accounted for to the nearest hour. Jobs involving a number of accounts or projects are prorated by the employee at the end of each day or other convenient period.

Columns 18-21. Enter the account number which may consist of two numbers and two letters. The alphabetical designators may or may not be present for an account. The appropriate account is selected from the account/project table printed on the current employee service report. Each line completed on the employee service report must contain an account number. Columns 18-19 contain only numeric information and columns 20-21 are reserved for alphabetical information only.

Columns 22-25. Enter the appropriate project number which may consist of three numbers and one letter. Columns 22-24 contain only numeric information. Column 25 is reserved for optional use of Subdistrict location codes. The project number is selected from the account/project table printed on the current employee service report. The numerical portion is entered right-hand justified and preceded with leading zeros wherever necessary.

Columns 26-29. Enter the appropriate work code selected from the work-code table on the current version of the employee service report. A reasonably complete diagnostic analysis of District operating costs and work accomplishments is made possible through use of a three-part work code, composed of four alphabetical characters (fig. 3). The first part of the work code, column 26, is a single letter denoting the major work category. Letters "C", "A", and "I" denote data collection, data synthesis and analysis, and indirect labor, respectively.

The middle two alphabetical characters of the work code, columns 27-28, denote the type of work. Some categories have no meaning in association with some work types. Therefore, the category designation has been left blank in some instances.

The third part of the work code, column 29, denotes the location of the employee's work effort.

The major work categories are broad classifications applied in the same manner as the Geological Survey Employee Service Report, Form 9-1348. The work-type codes are designed to describe most of the district work efforts yet not be so detailed as to be cumbersome. Work codes can be added or changed with only minor revisions to existing programs.

Category code "I" signifying indirect charges must be used exclusively with the overhead account. Category codes "A" and "C" are used with all direct charges including the prorated "20" accounts.

The location codes and work codes listed on figure 3 are generally self-explanatory. The enroute location code "E" is to be used in conjunction with fieldwork when considerable travel time is involved between observations. This would occur particularly in stream gaging, collecting water samples at various stations, making observation-well rounds, and in general field mapping. For example, in stream gaging where the distance between the office and the gaging stations and between the various gaging stations requires a significant amount of travel time, the entries would be CSWF for the measurement periods and CSWE for the travel time. The two entries would be prorated on an 8-hour day basis. If the travel time were minor the entry would be on one line with CSWF used to describe the work activity. If the observations were made continually by passengers and (or) the vehicle operator while driving, the location code "F" would be used because enroute travel would be incidental to the work effort.

Columns 30-31. Enter the number of regular duty hours, including hours of annual, sick, or other leave in this field.

Columns 32-33. Enter only those hours worked while receiving pay for overtime duty in this field. When this field is used, the regular hours field must be filled in with zeros.

Column 34. Personnel employed in "WAE" category enter a "1" in this column on each line used. All others will leave this column blank.

Column 35-78. These columns are not used.

Column 79. Punch program flags "0" and "1" in this column for file maintenance purposes only as required. This column does not appear on the employee service report (fig. 3) because it is used only by the person in charge of maintaining the data file.

Column 80. The preprinted "1" in column 80 is used as a card-type indicator.

The number of hours entered on the coding sheet is summed by the employee and reported at the bottom of the employee service report to insure that all hours have been accounted for.

A new line entry is to be used each and every time the account or project number changes or the letter code describing the type of work changes. A wavy line may be used to indicate repeated information on several lines for that particular field (fig. 3).

A person working on the same project for a period encompassing a weekend will make an entry for each week.

Information recorded in the space labeled "Remarks" on figure 3 is not keypunched. This space is provided for classifications or notes describing any particular work done. Each account/project, social security number and work code should be individually checked against current tables before keypunching if coding errors are frequently made by personnel. The number of hours worked and all leave must agree with hours furnished to the Washington offices.

Proration of work effort

Special overhead charges

Management and operational functions within the New Mexico District are divided into General Investigations, Surface Water, and Quality of Water disciplines. Work within the Quality of Water discipline falls into two categories, either sediment or chemical laboratory work. Certain support functions are often attributable to a group of closely related accounts and projects which may fall entirely within the scope of only one discipline. Because of this, the work efforts of the supporting activities are most equitably distributed among the associated projects or accounts on the basis of the ratio of the work effort of the individual project or account to the total work effort for the group. The prorated special overhead charges are computed in the CAN 2 computer program and assigned to the individual project and account on this basis. The special prorated accounts codes and the identified discipline used in the New Mexico District are 20GI (General Investigations), 20SW (Surface Water), 20CL (Chemical Laboratory), and 20SL (Sediment Laboratory). The projects associated with each special prorated account are listed in table 1.

Table 1.--Prorated account/project deck from master file

```
*A.          4
 B.      20GIO   GENERAL INVESTIGATIONS
 C.          002
             107
             112
             113
              .
              .
              .
                  (BLANK CARD)
 B.      20SWO   SURFACE WATER
 D.      01  001
         02  001
         06  001
         07  001
         .    .
         .    .
         .    .
                  (BLANK CARD)
 B.      20SLO   SED LAB
 D.      01  004
         13  004
         141 004
         14P 004
          .   .
          .   .
          .   .
                  (BLANK CARD)
 B.      20CLO   CHEM LAB
 D.      01  003
         11  003
         12  003
         13  003
         .    .
         .    .
         .    .
                  (BLANK CARD)
```

*A, B, C, and D refer to sections in the description of the prorated account/project decks.

General overhead (indirect charges)

The hours worked on general and administrative functions cannot be assigned to individual accounts or projects. It is also very difficult to equitably distribute the hourly charges for annual or sick leave to individual accounts and projects. This work effort is initially assigned as indirect charges to the overhead account ("00" account) in the New Mexico District cost-analysis system. The overhead account is treated in a manner similar to the other operating accounts in the CAN 2 program. Therefore, the total number of hours charged to the overhead account is computed but is not distributed among all of the other accounts and projects as in the CAN cost-analysis program previously described by Hiss, Trantolo and Sparks (1971).

This method is desirable in the New Mexico District because of the billing practices now followed. However, the hours of work effort in the overhead account could easily be prorated by adding this account number, along with all accounts and project numbers used, to the prorated account/project deck (table 1) in the master file.

Use of account "20" for surveillance

The "20" account is designed to be used as a surveillance or buffer account. One or two alphabetical designators are associated with the number "20" to distinguish the individual accounts, i.e., 20CP, 20A, 20HP, and so forth, as shown in the account/project table of figure 3. A "20" account may also be associated with one or more projects.

Examples of use

Example 1.--A special situation arises which requires a detailed work-effort analysis but does not warrant project designation. Oral presentations, new project development, trips and inter-division assistance fall into this category. Nearly all of these situations require accounting for small number of hours worked during a relatively short period of time.

Example 2.--It is often desirable to know the hours chargeable to the operation of separate portions of a large project. For example, a District manager may wish to determine the number of hours of work required to operate one particular stream gage within a project having a number of surface-water stations. This type of analysis requires assignment of the "20" account to the project to form an account/project pair. Care must be exercised when using this accounting procedure to insure that work effort is eventually included in the major account funding the project. Work effort can be shifted from one account and (or) project to another account and (or) project using the deletion and addition procedures described in the file-maintenance section below.

Example 3.--The work effort required to accomplish special consulting jobs can be accounted for and analyzed in detail by assigning a "20" account to the individual job. Whenever convenient or desirable, this type of work effort can be included in other related projects or accounts by following the procedures in example 2 above.

The "20" accounts provide the flexibility necessary for analyzing any District work effort in the detail desired by management. Care must be exercised to prevent loss or overages when transferring hours back and forth between other major accounts and the special "20" accounts.

Computer-program master files

Two master files are loaded into the CAN 2 program as card decks. These master files may also be used in the related CANCODE and CAN computer programs as shown in figure 4. The master files are revised as needed by adding new cards or deleting old ones from the program deck.

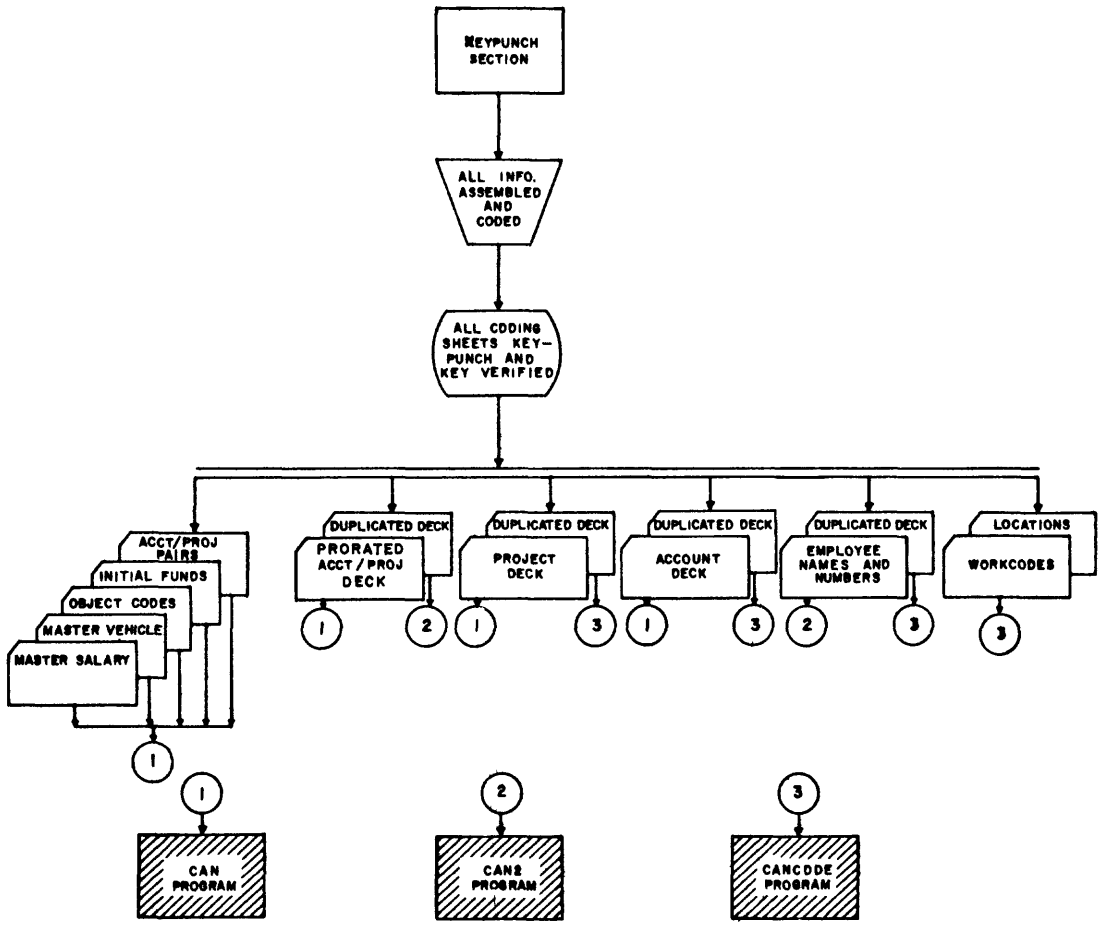

Figure 4.--Use of master file decks in three of the cost-analysis-system computer programs.

Required Computer-Program Master-File Decks

The computer-program master-file decks must appear in the order given below and as shown in tables 1 and 2.

The column headed "Field Reading Instructions" refers to the field reading instructions contained in the Computer Program (tables 3 and 4; Control Data Corporation, 1967).

I. Employee deck. Refer to table 2 and figure 4.

One card is punched for each employee. The card fields used in this deck correspond with the Master Salary cards in the CAN program and can be easily duplicated from this deck.

A new deck is punched at the beginning of each fiscal year. Cards are added whenever a new employee enters on duty. Cards are not removed when an employee leaves the District until the end of the fiscal year. The card format is as follows.

Card Columns	Field Reading Instructions	General Description and Instructions
1 - 9	R9	Social security number.
17 -30	A10,A4	Employee last name.
32 -33	A2	First and second initials.

Table 2.--Employee number and name deck from master file

Employee (social security) number	Name	First and middle initials
255581360	ABLE	RS
855282938	ARGØN	SA
555363020	AMBRØSE	SA
254504613	BAKER	JA
		
255222422	WISE	PE
255822057	WØRTH	RJ
549202334	YANKEE	TE
323503663	YANCEY	GL

II. Prorated account/project deck. Refer to table 1 and figure 4.

This deck contains prorated account/project pairs and related account/project pairs or projects among which the expenses are to be prorated.

An account/project can be prorated and assigned to either projects or account/project pairs but not both within a group. The formats to be used are described below.

The same deck used in the CAN program can also be used in CAN 2. If there are no prorated account/project pairs, this table may be left out of the program. However, if this table is not included, the card containing the number of prorated special "20" accounts must contain a zero punched in column 5.

A, B, C, and D refer to cards in table 1.

Descriptive comments can be added to the prorated account/project cards in fields delineated by columns 11-37 and 38-67 (Hiss, Trantolo, and Peterson, 1971, p. 41 and table 3). The card formats follow.

Card Columns	Field Reading Instructions	General Descriptions and Instructions
A. Count of prorated special 20 accounts.		
1 - 5	I5	A card containing only the number of "20" accounts with prorated charges must be the first card in the deck as shown in table 1. The number is right justified. This number cannot exceed 10 without program modification.

II. Prorated account/project deck - Concluded

Card Columns	Field Reading Instructions	General Descriptions and Instructions
	B. Prorated account/project card. Each prorated account/project card must be followed by the account/project pairs or projects it is to be prorated against. The last card of the group must contain a plus sign, "+", in both column 1 and column 5.	
1 - 8	R4,R4	
	C. Project cards to which prorated work effort is assigned. The composition of the project number is described under the section on input data.	
5 - 8	R4	Project number. Cannot exceed 50 projects.
	D. Account/project cards to which prorated work effort is assigned. Refer to instructions for encoding input data for composition of account and project numbers.	
1 - 4	R4	Account number.
5 - 8	R4	Project number. Cannot exceed 50 account/projects.

III. Date and period of report card.

	A. Period of report.	
1 -20	2A10	Columns 1-9 contain date of beginning of period expressed in day, month, and year order. July 1, 1971 would be encoded as 01 JUL 71. Columns 12-20 contain date of end of period expressed in same order and method as date for the beginning of the period
	B. Current month.	
22-23	A2	Written in display code. (01 = January, 02 = February, et cetera.)

Program run preparation

The following deck order includes Control Data Corporation 6600 SCOPE operations system-control cards as well as the position of the required data decks. Asterisks, "*", indicate the CDC 6600 control cards.

The CAN 2 computer program consists of three program modules referred to as SRTT, SRTR, and CANST. Tables 3, 4, and 5 contain listings of these three programs.

```
* 1.  Users program control card
* 2.  RUN(S,,,,,SRTT)
* 3.  REDUCE(ØFF)
* 4.  RUN(S,,,,,SRTR,377777)
* 5.  RUN(A,,,,,CANST,377777)
* 6.  REQUEST TAPE2,02.
* 7.  SRTT.
* 8.  RETURN(TAPE3)
* 9.  REQUEST TAPE22,HI.  (Time cards for the previous months)
*10.  REQUEST TAPE3,HI.  (Time cards for the current month)
*11.  SRTR.
*12.  CØPYCF(TAPE8,ØUTPUT)
*13.  CØPYCF(TAPE7,ØUTPUT)
*14.  RETURN(TAPE8,TAPE7)
*15.  REWIND(TAPE1)
*16.  REQUEST TAPE13,HI.  (Year-to-date time cards)
*17.  CØPYBF(TAPE1,TAPE13)
*18.  RETURN(TAPE13,TAPE1)
*19.  REQUEST TAPE9,02.
*20.  REWIND(TAPE2)
*21.  SØRTMRG.  (Control Data Corporation SØRT/MERGE 3.0 program)
*22.  REWIND(TAPE9)
*23.  RETURN(TAPE2)
*24.  REDUCE.
*25.  CANST.
```

*26. EØR (7,8,9 overpunched in column 1)

27. PRØGRAM SRTT

*28. EØR (7,8,9 overpunched in column 1)

29. PRØGRAM SRTR

*30. EØR (7,8,9 overpunched in column 1)

31. PRØGRAM CANST

*32. EØR (7,8,9 overpunched in column 1)

33. Data decks in following order:

A. "Add" and/or "delete" time cards

*B. EØR (7,8,9 overpunched in column 1)

C. Employee deck

*D. EØR (7,8,9 overpunched in column 1)

E. Count card (Number of prorated accounts in prorated account/project deck)

F. Prorated account/project deck

*G. EØR (7,8,9 overpunched in column 1)

H. SØRT(1,3,80,1,4) (SØRT/MERGE control cards are used to sort the time-card images by columns 41-61 and by columns 18-25. Raw data are taken from TAPE2, sorted, and entered onto TAPE9.)

FILE(TAPE2,S,D,,R,N)

FILE(TAPE9,Ø,D,,R,N)

KEY(A,C,41,10)

KEY(A,C,51,10)

KEY(A,C,18,8)

RECORD(I,U,80)

END

*I. EØR (7,8,9 overpunched in column 1)

J. Date and period of report card

*K. EØF (6,7,8,9 overpunched in column 1)

TAPE3 contains the time cards for the current month (fig. 2). The program requires the tape to be prepared in coded form, one card per record.

TAPE22 contains the time cards for the previous accounting periods (fig. 2). The program requires these time cards to be sorted and written in binary form, 250 cards per record. If there are not enough cards to fill the last 250-card record, this record should be filled with 9's. TAPE22 for the computer run for each month is generated as TAPE13 during the CAN 2 program run for the prior month. TAPE22 is not required the first time the CAN 2 program is run at the beginning of each fiscal year, as there are neither prior runs nor time cards from previous periods.

TAPE13 will contain the year-to-date time cards. The program transfers all of the revised, sorted time cards onto this tape in binary form, 250 cards per record. If there are not enough time cards to fill the last 250-card record, this record will be filled with 9's. TAPE13 will become TAPE22 for the next CAN 2 run.

Production of a quarterly report

Special procedures

District and project managers frequently need to know the number of hours worked on a project or account during a particular quarterly period. These reports can be computed and printed with a few relatively minor changes to the CAN 2 program.

Changes required to program module SRTR for the generation of a quarterly report are described below. Asterisks, "*", indicate the CDC 6600 control cards.

I. Insert the following four FORTRAN statements after card number A 51 of program SRTR (table 4).

   A. CALL BIN2BCD(14,1)

   B. REWIND 7

   C. REWIND 8

   D. GØ TØ 45

II. Insert the following five FORTRAN statements in subroutine BIN2BCD of program SRTR.

   A. After card number H 25 in table 4, insert

      1. IQT = (display code value of starting month of quarterly report selected from the list in "a" below)

         a. Examples

            (1) IQT = 3334B for January through March

            (2) IQT = 3337B for April through June

            (3) IQT = 3342B for July through September

            (4) IQT = 3433B for October through December

      2. GØ TØ 141

B. After card number H 27 in table 4, insert

1. IƵR = (LS(J1,-24).AND.7777B)

2. IF (IƵR.LT.IQT.ØR.IƵR.GT.(IQT+2))

GØ TØ 14

C. After card number H 82 in table 4, insert

1. 141 CØNTINUE

The following deck order is necessary to obtain a quarterly report.

```
* 1.  Users job card
* 2.  Users task card
* 3.  RUN(S,,,,,SRTR,377777)
* 4.  RUN(A,,,,,CANST,377777)
* 5.  REQUEST TAPE14,HI.  (Year-to-date time cards)
* 6.  SRTR.
* 7.  RETURN(TAPE14)
* 8.  REWIND(TAPE7,TAPE8)
* 9.  CØPYCF(TAPE8,ØUTPUT)
*10.  CØPYCF(TAPE7,ØUTPUT)
*11.  RETURN(TAPE7,TAPE8)
*12.  REWIND(TAPE2,TAPE9)
*13.  RFL(100000)
*14.  SØRTMRG.
*15.  RETURN(TAPE2)
*16.  REWIND(TAPE9)
*17.  RFL(30000)
*18.  REDUCE.
*19.  CANST.
*20.  EØR   (7,8,9 overpunched in column 1)
 21.  PRØGRAM SRTR
*22.  EØR   (7,8,9 overpunched in column 1)
 23.  PRØGRAM CANST
*24.  EØR   (7,8,9 overpunched in column 1)
```

25. Data decks in following order:
    A. Employee deck
   *B. EØR (7,8,9 overpunched in column 1)
    C. Count card (Number of prorated accounts in prorated account/project deck)
    D. Prorated account/project deck

*26. EØR (7,8,9 overpunched in column 1)

27. (SØRT/MERGE control cards are used to sort the time-card images by columns 41-61 and by columns 18-25. Raw data are taken from TAPE2, sorted, and entered onto TAPE9.)
    A. SØRT(1,3,80,1,4)
    B. FILE(TAPE2,S,D,,R,N)
    C. FILE(TAPE9,Ø,D,,R,N)
    D. KEY(A,C,41,10)
    E. KEY(A,C,51,10)
    F. KEY(A,C,18,8)
    G. RECØRD(I,U,80)
    H. END

*28. EØR (7,8,9 overpunched in column 1)

29. Date card

*30. EØF (6,7,8,9 overpunched in column 1)

Error messages

Validity checks of social security numbers are made by comparing the numbers punched into the time cards with numbers in the master employee deck. Whenever a nonmatch is encountered, X's are printed in the space provided for the last name and initials on the report. The cards containing the errors are also punched. These cards can then be corrected as described in the section on file maintenance.

Much more comprehensive error-detection checks are written into the CAN and CAN 1350 programs which have been previously described by Hiss, Trantolo, and Sparks (1971) and Hiss (1969).

File maintenance

Additions and corrections to time-card tape file

Corrections to the time-card magnetic-tape file are required as a result of changes in accounts and projects or detection of errors during program runs. Provision is made to correct the file during the computation of the year-to-date reports. Cards to be deleted or added to the time-card magnetic-tape file are designated by a "0" or "1", respectively, punched into column 79.

Cards with errors are deleted from the tape file by either pulling the original time card or by punching an exact duplicate of the card to be deleted and adding a "0" in column 79. Cards are added by punching the information normally required in the time card and then adding a "1" in column 79. The "0" and "1" are sensed by the program and serve as flags to call special routines within the CAN 2 program. The addition and deletion deck is not combined with the monthly cards but is entered into the run as a distinct and separate deck as shown in the program run preparation section.

Changes made by revising previous time cards for any period are noted and appropriate adjustments entered on the CAN 2 reports. Adjustments and corrections to work effort will be balanced out on the year-to-date report. However, reports for prior months will not normally be rerun and the only record of adjustments will be the annotations to the original monthly report. Errors found or changes made after the report has been run are normally updated on the next monthly run of the CAN 2 program.

Reports

Each report produced by the CAN 2 computer program contains four parts. The individual sections are referred to as the "Summary of work effort by employee within account and project", "Summary of work effort by account and project", "Summary of prorated work effort by account and project", and "Summary of work effort by employee" reports. Very abbreviated examples of the individual reports are shown in tables 6, 7, 8, and 9.

Reports are computed and printed on a monthly, year-to-date, monthly and year-to-date combination, or quarterly basis as required. As noted above, the first module of the CAN 2 program referred to as program SRTT in figure 2 and table 3 is executed only when either cards are added to correct the ancestral tape or deletions to this tape are required.

The report summarizing work effort by individual employee within each account and project contains a listing of all the time cards for each employee sorted into order by employee number and by date within each project and account. An example of this report is shown in table 6. Subtotals are accumulated for each employee, each account and sub-account, each project, and sub-project and printed when the last card before a change to another employee sub-account, account or project is encountered. A grand total of the hours worked by all of the employees within the District is accumulated and printed at the end of the report. This report is used whenever a detailed description of the number of hours worked by an employee is needed.

The report summarizing work effort by project within each account and sub-account (examples 14 and 14S, respectively) contains a list of accounts and projects sorted into increasing numeric order as shown in table 7. Work effort totals and subtotals are computed for each project, sub-account and account and printed in this report. A grand total of the number of hours worked in the District is printed at the end of the report. Information needed for billing and operational management of individual accounts and projects is provided in this report.

The hours of work effort prorated from the prorated 20 accounts are computed and printed by account and project in one summary report after the execution of program modules SRTR and SRTT (table 8). This information is used to confirm the proration and provides management a measure of the working relationship between major and auxiliary projects. It is also used to determine the accounts to be charged in the monthly report, giving a summary of hours by fund and phase.

A report summarizing work effort by individual employees itemizes the work performed on each account/project pair by each employee (table 9). This report is the inverse of the "Summary of work effort by employee within account and project" shown in table 6. A detailed analysis of the number of hours worked on each of a number of account/projects can be obtained readily from this report.

References

Control Data Corporation, 1967, 6400/6500/6600 computer systems, FORTRAN reference manual: Documentation Dept., Control Data Corp., Palo Alto, Calif.

Hiss, W. L., 1969, A computer-generated monthly report--Summary of Hours by Fund and Phase: U.S. Geol. Survey open-file rept., 31 p., 5 figs.

Hiss, W. L., Trantolo, A. P., and Sparks, J. L., 1971, New Mexico District cost-analysis system: U.S. Geol. Survey open-file rept., 105 p., 14 figs.

Table 3.--CAN 2 computer program module 1--program SRTT

```
                                                                                    Reference number
      PROGRAM SRTT(TAPE1,TAPE2,TAPE3,TAPE4,OUTPUT,TAPE12,TAPE14,INPUT,TA    A    1 SRTT     2
     1PE9=INPUT)                                                            A    2 SRTT     3
C     ****************************************************************     A    3 SRTT     4
C     ---- TAPE 1     SORT FILE (BINARY) INPUT TO MRGR                      A    4 SRTT     5
C     ---- TAPE2      SORT FILE (BINARY) INPUT TO MRGR                      A    5 SRTT     6
C     ---- TAPE3      RAW BCD INPUT                                         A    6 SRTT     7
C        TAPE12    SORTED DELETE CDS                                       A    7 SRTT     8
C        TAPE14     SORTED ADD CDS                                         A    8 SRTT     9
C     ****************************************************************     A    9 SRTT    10
      COMMON /PARM/ INA,INB,IN,NWD,NKEY,END,IND,IST,IA,IK,ISUM,IT1,IT2,I    A   10 SRTT    11
     1T3,IT4,T1,T2,T3,J,MANY,MANYH,LOOK                                     A   11 SRTT    12
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                      A   12 SRTT    13
      DATA IT1,IT2,IT3,IT4/1,2,3,4/,END/10H9999999999/,MANYH/250/           A   13 SRTT    14
      DIMENSION ICD(8), DUM(8)                                              A   14 SRTT    15
      INTEGER T1,T2,T3,T12                                                  A   15 SRTT    16
      LOGICAL EOFT3,EOFLOOK,EOFRC                                           A   16 SRTT    17
      MANY=MANYH+MANYH                                                      A   17 SRTT    18
C     COMPUTE THE NUMBER OF WORDS IN EACH RECORD.                           A   18 SRTT    19
      NWD=IFIX(FLOAT(LOCF(KEYA)-LOCF(A))/FLOAT(MANY)+.00001)                A   19 SRTT    20
C     COMPUTE THE NUMBER OF KEY WORDS USED TO SORT BY.                      A   20 SRTT    21
      NKEY=IFIX(FLOAT(LOCF(KEYB)-LOCF(KEYA))/FLOAT(MANYH)+.00001)           A   21 SRTT    22
      REWIND 3                                                              A   22 SRTT    23
      REWIND 14                                                             A   23 SRTT    24
C     READ IN ADD CDS AND DELETE CDS IN ANY ORDER                           A   24 SRTT    25
C     ADD = 1 IN COL 79   DELETE = 0 IN COL 79                              A   25 SRTT    26
1     READ (9,11) (ICD(I),I=1,8)                                            A   26 SRTT    27
      IF (ENDFILE 9) 3,2                                                    A   27 SRTT    28
2     DECODE (9,12,ICD(8) )IDT                                              A   28 SRTT    29
      IF (IDT.LT.0.OR.IDT.GT.1) STOP 10                                     A   29 SRTT    30
      IF (IDT.EQ.1) L=14                                                    A   30 SRTT    31
      IF (IDT.EQ.0) L=3                                                     A   31 SRTT    32
C     WRITE ADD CDS ON TAPE14                                               A   32 SRTT    33
C     WRITE DELETE CDS ON TAPE3                                             A   33 SRTT    34
      WRITE (L,11) (ICD(I),I=1,8)                                           A   34 SRTT    35
      GO TO 1                                                               A   35 SRTT    36
3     L=12                                                                  A   36 SRTT    37
      END FILE 14                                                           A   37 SRTT    38
4     END FILE 3                                                            A   38 SRTT    39
C     SORT TAPE3                                                            A   39 SRTT    40
C     INPUT TO SORT NEED BE ON TAPE3                                        A   40 SRTT    41
      CALL SRTB                                                             A   41 SRTT    42
      REWIND L                                                              A   42 SRTT    43
      REWIND LOOK                                                           A   43 SRTT    44
5     INA=0                                                                 A   44 SRTT    45
      EOFLOOK=EOFRC(LOOK,DUM)                                               A   45 SRTT    46
      IF (EOFLOOK) 7,6                                                      A   46 SRTT    47
C     WRITE SORTED DELETE CDS TO TAPE12                                     A   47 SRTT    48
C     WRITE SORTED ADD CDS TO TAPE14                                        A   48 SRTT    49
6     WRITE (L) ((KEYA(IK,K),IK=1,NKEY),(A(IA,K),IA=1,NWD),K=1,250)         A   49 SRTT    50
      GO TO 5                                                               A   50 SRTT    51
7     END FILE L                                                            A   51 SRTT    52
      REWIND L                                                              A   52 SRTT    53
      IF (L.EQ.14) GO TO 10                                                 A   53 SRTT    54
      L=14                                                                  A   54 SRTT    55
      REWIND L                                                              A   55 SRTT    56
      REWIND 3                                                              A   56 SRTT    57
C     READ UNSORTED ADD CDS FROM TAPE14                                     A   57 SRTT    58
8     READ (L,11) (ICD(N),N=1,8)                                            A   58 SRTT    59
      IF (ENDFILE L) 4,9                                                    A   59 SRTT    60
C     WRITE UNSORTED ADD CDS TO TAPE3                                       A   60 SRTT    61
9     WRITE (3,11) (ICD(N),N=1,8)                                           A   61 SRTT    62
      GO TO 8                                                               A   62 SRTT    63
10    CONTINUE                                                              A   63 SRTT    64
C                                                                           A   64 SRTT    65
11    FORMAT (8A10)                                                         A   65 SRTT    66
12    FORMAT (8X,I1)                                                        A   66 SRTT    67
      END                                                                   A   67-SRTT    68
      SUBROUTINE SRTB                                                       B    1 SRTT    69
C     ****************************************************************    B    2 SRTT    70
C     THIS ROUTINE GETS A BLOCK OF MANY RECORDS FROM T3 AND HAS A KEY       B    3 SRTT    71
C     SET FROM THE KEY WORDS                                                B    4 SRTT    72
C     SORT PERFORMS A DIRECT CORE SORT OF THAT BLOCK AND WRITES             B    5 SRTT    73
C     TWO BLOCKS OF MANYH (=.5*MANY) RECORDS PLUS ASSOCIATED KEY WORDS      B    6 SRTT    74
C     ONTO IT1.  THIS PROCESS IS CONTINUED UNTIL ALL OF THE RECORDS HAVE    B    7 SRTT    75
C     BEEN READ OFF OF T3.  NOTE THAT THIS ROUTINE ALTERNATELY WRITES       B    8 SRTT    76
C     THE SORTED BLOCKS ONTO IT1 AND IT2.                                   B    9 SRTT    77
C     ****************************************************************    B   10 SRTT    78
```

Table 3.--CAN 2 computer program module 1--program SRTT - Continued

```
      COMMON /PARM/ INA,INB,IN,NWD,NKEY,END,IND,IST,IA,IK,ISUM,IT1,IT2,I   B  11 SRTT    79
     1T3,IT4,T1,T2,T3,J,MANY,MANYH,LOOK                                   B  12 SRTT    80
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                     B  13 SRTT    81
      INTEGER T1,T2,T3,T12                                                 B  14 SRTT    82
      LOGICAL EOFT3                                                        B  15 SRTT    83
C     INITILIZE TAPE POINTERS AND POSITIONS.                               B  16 SRTT    84
      T3=IT3                                                               B  17 SRTT    85
      T12=IT1+IT2                                                          B  18 SRTT    86
      T1=IT2                                                               B  19 SRTT    87
      REWIND IT1                                                           B  20 SRTT    88
      REWIND IT2                                                           B  21 SRTT    89
      END FILE IT1                                                         B  22 SRTT    90
      END FILE IT2                                                         B  23 SRTT    91
      REWIND IT1                                                           B  24 SRTT    92
      REWIND IT2                                                           B  25 SRTT    93
      REWIND IT3                                                           B  26 SRTT    94
      REWIND IT4                                                           B  27 SRTT    95
      EOFT3=.FALSE.                                                        B  28 SRTT    96
1     J=0                                                                  B  29 SRTT    97
C     SWITCH WRITE TAPE NUMBERS.                                           B  30 SRTT    98
      T1=T12-T1                                                            B  31 SRTT    99
C     J COUNTS THE NUMBER OF RECORDS IN EACH BLOCK.                        B  32 SRTT   100
2     J=J+1                                                                B  33 SRTT   101
C     READ IN ONE RECORD---NWD IS DEFINED BY THE DIMENSION AN A            B  34 SRTT   102
C     I.E. 8 IN THIS CASE                                                  B  35 SRTT   103
C     THIS CASE.                                                           B  36 SRTT   104
      READ (T3,10) (A(IA,J),IA=1,NWD)                                      B  37 SRTT   105
      IF (ENDFILE T3) 5,3                                                  B  38 SRTT   106
C     FORM KEY WORDS---NKEY IS DEFINED BY THE DIMENSION ON KEYB            B  39 SRTT   107
C     I.E. 5 IN THIS CASE                                                  B  40 SRTT   108
3     DO 4 IK=1,NKEY                                                       B  41 SRTT   109
C     KEYSET RETURNS KEYS MAJOR TO MINOR.                                  B  42 SRTT   110
4     KEYA(IK,J)=KEYSET(A(1,J),IK)                                         B  43 SRTT   111
C     GO TO GET NEXT RECORD IF THE BLOCK OF MANY RECORDS IS NOT FULL.      B  44 SRTT   112
      IF (J.LT.MANY) 2,6                                                   B  45 SRTT   113
C     ALL OF THE RECORDS HAVE BEEN READ IN.                                B  46 SRTT   114
5     J=J-1                                                                B  47 SRTT   115
      IF (J.EQ.0) GO TO 9                                                  B  48 SRTT   116
      EOFT3=.TRUE.                                                         B  49 SRTT   117
C     PERFORM DIRECT CORE SORT OF THE RECORDS BASED UPON THE KEY WORDS.    B  50 SRTT   118
6     CALL SORT                                                            B  51 SRTT   119
      IND=MIN0(J,MANYH)                                                    B  52 SRTT   120
C     ARE THERE ENOUGH RECORDS                                             B  53 SRTT   121
C     TO WRITE A FULL BLOCK OF MANYH RECORDS OUT                           B  54 SRTT   122
      IF (IND.LT.MANYH) GO TO 8                                            B  55 SRTT   123
C     WRITE FIRST FULL BLOCK OF MANYH RECORDS.                             B  56 SRTT   124
      WRITE (T1) ((KEYA(IK,K),IK=1,NKEY),(A(IA,K),IA=1,NWD),K=1,IND)       B  57 SRTT   125
      IF (IND.EQ.J) GO TO 9                                                B  58 SRTT   126
      INO=J-IND                                                            B  59 SRTT   127
      IF (INO.LT.MANYH) GO TO 7                                            B  60 SRTT   128
C     WRITE SECOND BLOCK OF MANYH RECORDS.                                 B  61 SRTT   129
      WRITE (T1) ((KEYB(IK,K),IK=1,NKEY),(B(IA,K),IA=1,NWD),K=1,INO)       B  62 SRTT   130
      IF (EOFT3) 9,1                                                       B  63 SRTT   131
7     IUT=MANYH-IND                                                        B  64 SRTT   132
C     IF THE FIRST BLOCK IS NOT FULL, DUMMY FILL IT ON TAPE.               B  65 SRTT   133
      WRITE (T1) ((KEYB(IK,K),IK=1,NKEY),(B(IA,K),IA=1,NWD),K=1,IND),((E   B  66 SRTT   134
     1ND,IK=1,NKEY),(END,IA=1,NWD),K=1,IUT)                                B  67 SRTT   135
      GO TO 9                                                              B  68 SRTT   136
8     IUT=MANYH-IND                                                        B  69 SRTT   137
C     IF THE SECOND BLOCK IS  NOT FULL, DUMMY FILL IT ON TAPE.             B  70 SRTT   138
      WRITE (T1) ((KEYA(IK,K),IK=1,NKEY),(A(IA,K),IA=1,NWD),K=1,IND),((E   B  71 SRTT   139
     1ND,IK=1,NKEY),(END,IA=1,NWD),K=1,IUT)                                B  72 SRTT   140
9     IF (J.GT.MANYH) J=J-MANYH                                            B  73 SRTT   141
C     MERGE IT1 AND IT2 IN A BINARY FASHION ONTO EITHER IT1 OR IT3         B  74 SRTT   142
C     DEPENDING ON HOW MANY RECORDS THERE ARE                              B  75 SRTT   143
      CALL MRGR (1,0)                                                      B  76 SRTT   144
      RETURN                                                               B  77 SRTT   145
C                                                                          B  78 SRTT   146
10    FORMAT (8A10)                                                        B  79 SRTT   147
      END                                                                  B  80-SRTT   148
      SUBROUTINE SORT                                                      C   1 SRTT   149
C     ***********************************************************          C   2 SRTT   150
C     THIS ROUTINE PERFORMS A DIRECT CORE SORT ON THE J RECORDS STORED     C   3 SRTT   151
C     IN A AND B--BASED ON THE KEY WORDS STORED IN KEYA AND KEYB.          C   4 SRTT   152
C     THIS ROUTINE DOES NOT PRESERVE A SUBSORT.                            C   5 SRTT   153
C     IT PERFORMS ITS JOB IN BUBBLE SORT FASHION.                          C   6 SRTT   154
C     ***********************************************************          C   7 SRTT   155
```

Table 3.--CAN 2 computer program module 1--program SRTT - Continued

```
      COMMON /PARM/ INA,INB,IN,NWD,NKEY,END,IND,IST,IA,IK,ISUM,IT1,IT2,I  C    8 SRTT   156
     1T3,IT4,T1,T2,T3,J,MANY,MANYH                                       C    9 SRTT   157
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                   C   10 SRTT   158
      EQUIVALENCE (ISV,SAV)                                              C   11 SRTT   159
      IF (J.EQ.1) RETURN                                                 C   12 SRTT   160
      JM=J-1                                                             C   13 SRTT   161
      DO 6 I=1,JM                                                        C   14 SRTT   162
      IP=I+1                                                             C   15 SRTT   163
      LOC=I                                                              C   16 SRTT   164
C     THE 3 LOOP LOCATES THE RECORD THAT GOES NEXT--THE LOC-TH RECORD    C   17 SRTT   165
C     FROM THE REMAINING RECORDS.                                        C   18 SRTT   166
      DO 3 L=IP,J                                                        C   19 SRTT   167
      DO 1 IK=1,NKEY                                                     C   20 SRTT   168
      IF (KEYA(IK,L)-KEYA(IK,LOC)) 2,1,3                                 C   21 SRTT   169
1     CONTINUE                                                           C   22 SRTT   170
      GO TO 3                                                            C   23 SRTT   171
2     LOC=L                                                              C   24 SRTT   172
3     CONTINUE                                                           C   25 SRTT   173
C     THE 4 LOOP SWITCHES THE KEY THAT IS IN THE I-TH SLOT WITH THE ONE  C   26 SRTT   174
C     IN THE LOC-TH SLOT.                                                C   27 SRTT   175
      DO 4 IK=1,NKEY                                                     C   28 SRTT   176
      ISV=KEYA(IK,I)                                                     C   29 SRTT   177
      KEYA(IK,I)=KEYA(IK,LOC)                                            C   30 SRTT   178
4     KEYA(IK,LOC)=ISV                                                   C   31 SRTT   179
C     THE 5 LOOP SWITCHES THE RECORD THAT IS IN THE I-TH SLOT            C   32 SRTT   180
C     WITH THE ONE IN THE LOC-TH SLOT.                                   C   33 SRTT   181
      DO 5 IA=1,NWD                                                      C   34 SRTT   182
      SAV=A(IA,I)                                                        C   35 SRTT   183
      A(IA,I)=A(IA,LOC)                                                  C   36 SRTT   184
5     A(IA,LOC)=SAV                                                      C   37 SRTT   185
6     CONTINUE                                                           C   38 SRTT   186
      RETURN                                                             C   39 SRTT   187
      END                                                                C   40-SRTT   188
      SUBROUTINE MRGR (INMGR,IZ)                                         D    1 SRTT   189
C     ********************************************************************* D    2 SRTT   190
C     MRGR TAKES THE N BLOCKS OF SORTED RECORDS OFF TAPES T1 AND T2      D    3 SRTT   191
C     AND WRITES N/2 BLOCKS OF SORTED RECORDS ONTO TAPES T3 AND T4.      D    4 SRTT   192
C     MRGR MAY NOT PRESERVE A SUBSORT.                                   D    5 SRTT   193
C     ********************************************************************* D    6 SRTT   194
      COMMON /PARM/ INA,INB,IN,NWD,NKEY,END,IND,IST,IA,IK,ISUM,IT1,IT2,I D    7 SRTT   195
     1T3,IT4,T1,T2,T3,J,MANY,MANYH,LOOK                                  D    8 SRTT   196
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                   D    9 SRTT   197
      LOGICAL EOFRC,EOFT1,EOFT2                                          D   10 SRTT   198
      INTEGER T1,T2,T3,T13,T24,TSS,T34                                   D   11 SRTT   199
      DIMENSION KEYALT(5), KEYBLT(5), KEYWLT(5)                          D   12 SRTT   200
      T1=IT1                                                             D   13 SRTT   201
      T2=IT2                                                             D   14 SRTT   202
      T3=IT3                                                             D   15 SRTT   203
      T34=IT3+IT4                                                        D   16 SRTT   204
      T13=IT1+IT3                                                        D   17 SRTT   205
      T24=IT2+IT4                                                        D   18 SRTT   206
      TSS=T13+T24                                                        D   19 SRTT   207
1     END FILE T1                                                        D   20 SRTT   208
      END FILE T2                                                        D   21 SRTT   209
      REWIND IT1                                                         D   22 SRTT   210
      REWIND IT2                                                         D   23 SRTT   211
      REWIND IT3                                                         D   24 SRTT   212
      REWIND IT4                                                         D   25 SRTT   213
      INA=0                                                              D   26 SRTT   214
C     READ A BLOCK OF MANYH RECORDS OFF TAPE T1 SAVING THE KEYS FROM     D   27 SRTT   217
C     THE LAST RECORD READ IN KEYALT.                                    D   28 SRTT   218
      EOFT1=EOFRC(T1,KEYALT)                                             D   29 SRTT   219
C     READ A BLOCK OF MANYH RECORDS OFF TAPE T2 SAVING THE KEYS FROM     D   30 SRTT   220
C     THE LAST RECORD READ IN KEYBLT.                                    D   31 SRTT   221
      EOFT2=EOFRC(T2,KEYBLT)                                             D   32 SRTT   222
C     IF THERE IS NO DATA ON EITHER T1 OR T2, GO TO 22                   D   33 SRTT   223
      IF (EOFT1.AND.EOFT2) GO TO 22                                      D   34 SRTT   224
C     IF THERE IS DATA ON ONLY ONE TAPE, MERGING IS DONE.                D   35 SRTT   225
C     NOTE  MANYH RECORDS HAVE BEEN READ OFF.                            D   36 SRTT   226
      IF (EOFT1.OR.EOFT2) GO TO 21                                       D   37 SRTT   227
      ISUM=0                                                             D   38 SRTT   228
C     PERFORM A DIRECT CORE MERGE OF THE TWO BLOCKS OF MANYH RECORDS.    D   39 SRTT   229
      CALL PSHDWN                                                        D   40 SRTT   230
2     IST=1                                                              D   41 SRTT   231
      IND=MANYH                                                          D   42 SRTT   232
```

Table 3.--CAN 2 computer program module 1--program SRTT - Continued

```
3     J1=IST                                                                D  43 SRTT   233
C     WRITE OUT A FULL BLOCK OF MANYH RECORDS AND KEYS STARTING FROM IST    D  44 SRTT   234
      WRITE (T3) ((KEYA(IK,K),IK=1,NKEY),(A(IA,K),IA=1,NWD),K=IST,IND)      D  45 SRTT   235
C     SAVE THE KEYS OF THE LAST RECORD JUST WRITTEN OUT.                    D  46 SRTT   236
      DO 4 IK=1,NKEY                                                        D  47 SRTT   237
4     KEYWLT(IK)=KEYA(IK,IND)                                               D  48 SRTT   238
C     ISUM COUNTS THE NUMBER OF RECORDS IN THE SORT                         D  49 SRTT   239
C     HOWEVER IT IS NOT NECESSARY FOR THE SORT.                             D  50 SRTT   240
      ISUM=ISUM+MANYH                                                       D  51 SRTT   241
C     SHOVE THOSE RECORDS FROM IND+1 TO IN UP TO IST+1 TO IST+(IN-IND).     D  52 SRTT   242
      CALL SHOVUP                                                           D  53 SRTT   243
C     IF KEYALT IS LESS THAN KEYBLT READ OFF TAPE T1                        D  54 SRTT   244
C     ELSE READ OFF TAPE T2.                                                D  55 SRTT   245
      DO 5 IK=1,NKEY                                                        D  56 SRTT   246
      IF (KEYALT(IK)-KEYBLT(IK)) 13,5,6                                     D  57 SRTT   247
5     CONTINUE                                                              D  58 SRTT   248
      GO TO 13                                                              D  59 SRTT   249
C     IF ALL THE RECORDS ON T2 HAVE BEEN READ (EOF T2 = .TRUE.)             D  60 SRTT   250
C     READ OFF TAPE T1                                                      D  61 SRTT   251
6     IF (EOFT2) 19,7                                                       D  62 SRTT   252
C     READ IN A NEW BLOCK OF RECORDS.                                       D  63 SRTT   253
7     EOFT2=EOFRC(T2,KEYBLT)                                                D  64 SRTT   254
      IF (EOFT2) 19,8                                                       D  65 SRTT   255
C     MERGE THE OLD BLOCK WITH THE NEW BLOCK.                               D  66 SRTT   256
8     CALL PSHOWN                                                           D  67 SRTT   257
      LOOK=IN8+1                                                            D  68 SRTT   258
      IF (J1.GT.LOOK) GO TO 11                                              D  69 SRTT   259
C     FIND IST  -  THE BEGINNING INDEX FOR THE WRITE.                       D  70 SRTT   260
      DO 10 IST=J1,LOOK                                                     D  71 SRTT   261
      DO 9 IK=1,NKEY                                                        D  72 SRTT   262
      IF (KEYWLT(IK)-KEYA(IK,IST)) 12,9,10                                  D  73 SRTT   263
9     CONTINUE                                                              D  74 SRTT   264
      GO TO 12                                                              D  75 SRTT   265
10    CONTINUE                                                              D  76 SRTT   266
C     CAN NO LONGER WRITE ON THIS TAPE WITH THE RECORDS BEING IN ORDER      D  77 SRTT   267
C     SWITCH TO OTHER TAPE.                                                 D  78 SRTT   268
11    T3=T34-T3                                                             D  79 SRTT   269
      GO TO 2                                                               D  80 SRTT   270
C     COMPUTE END INDEX OF WRITE.                                           D  81 SRTT   271
12    IND=IST+MANYH-1                                                       D  82 SRTT   272
      GO TO 3                                                               D  83 SRTT   273
C     IF ALL THE RECORDS ON T1 HAVE BEEN READ, READ OFF T2.                 D  84 SRTT   274
13    IF (EOFT1) 20,14                                                      D  85 SRTT   275
C     READ A NEW BLOCK OF RECORDS.                                          D  86 SRTT   276
14    EOFT1=EOFRC(T1,KEYALT)                                                D  87 SRTT   277
      IF (EOFT1) 20,8                                                       D  88 SRTT   278
C     CAN THE LAST BLOCK OF RECORDS BE WRITTEN ON THE CURRENT TAPE,         D  89 SRTT   279
C     NO GOES TO 17, YES GOES TO 18.                                        D  90 SRTT   280
15    DO 16 IK=1,NKEY                                                       D  91 SRTT   281
      IF (KEYWLT(IK)-KEYA(IK,1)) 18,16,17                                   D  92 SRTT   282
16    CONTINUE                                                              D  93 SRTT   283
      GO TO 18                                                              D  94 SRTT   284
17    T3=T34-T3                                                             D  95 SRTT   285
18    IUT=MANYH-IN                                                          D  96 SRTT   286
      IST=1                                                                 D  97 SRTT   287
      IND=IN                                                                D  98 SRTT   288
C     IF THE LAST BLOCK IS NOT FULL, DUMMY WRITE A FULL BLOCK.              D  99 SRTT   289
      IF (IUT.GT.0) WRITE (T3) ((KEYA(IK,K),IK=1,NKEY),(A(IA,K),IA=1,NWD    D 100 SRTT   290
     1),K=IST,IND),((END,IK=1,NKEY),(END,IA=1,NWD),K=1,IUT)                 D 101 SRTT   291
C     IF THE LAST BLOCK IS FULL, WRITE IT OUT.                              D 102 SRTT   292
      IF (IUT.EQ.0) WRITE (T3) ((KEYA(IK,K),IK=1,NKEY),(A(IA,K),IA=1,NWD    D 103 SRTT   293
     1),K=IST,IND)                                                          D 104 SRTT   294
C     SWITCH TAPE FILE NUMBERS.                                             D 105 SRTT   295
      ISUM=ISUM+IN                                                          D 106 SRTT   296
      T3=T1                                                                 D 107 SRTT   297
      T1=T13-T1                                                             D 108 SRTT   298
      T2=T24-T2                                                             D 109 SRTT   299
      T34=TSS-T34                                                           D 110 SRTT   300
      GO TO 1                                                               D 111 SRTT   301
C     IS T1 EMPTY.                                                          D 112 SRTT   302
19    IF (EOFT1) 15,14                                                      D 113 SRTT   303
C     IS T2 EMPTY.                                                          D 114 SRTT   304
20    IF (EOFT2) 15,7                                                       D 115 SRTT   305
21    LOOK=T1                                                               D 116 SRTT   306
      IF (EOFT1) LOOK=T2                                                    D 117 SRTT   307
C     LOOK IS THE FINAL OUTPUT TAPE, EITHER IT1 OR IT3.                     D 118 SRTT   308
C     RECORDS ARE NOW SORTED AND READY FOR CONVERSION FROM BINARY           D 119 SRTT   309
C     WRITTEN TAPES TO USABLE FORM.                                         D 120 SRTT   310
      RETURN                                                                D 121 SRTT   311
22    LOOK=3                                                                D 122 SRTT   312
      END FILE 3                                                            D 123 SRTT   313
      RETURN                                                                D 124 SRTT   314
      END                                                                   D 125-SRTT   315
```

Table 3.--CAN 2 computer program module 1--program SRTT - Continued

```
      LOGICAL FUNCTIONEOFRC(IT,LAST)                                    E   1 SRTT   316
C     ******************************************************************* E   2 SRTT   317
C     EOF RC READS A BLOCK OF NWO RECORDS OFF IT.                       E   3 SRTT   318
      COMMON /PARM/ INA,INB,IN,NWO,NKEY,END,IND,IST,IA,IK,ISUM,IT1,IT2,I E   4 SRTT   319
     1T3,IT4,T1,T2,T3,J,MANY,MANYH                                      E   5 SRTT   320
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                  E   6 SRTT   321
      DIMENSION LAST(1)                                                 E   7 SRTT   322
      INTEGER END                                                       E   8 SRTT   323
      EQUIVALENCE (END,IEND)                                            E   9 SRTT   324
      K1=INA+1                                                          E  10 SRTT   325
      IN=K1+MANYH-1                                                     E  11 SRTT   326
C     READ A BLOCK.                                                     E  12 SRTT   327
      READ (IT) ((KEYA(IK,K),IK=1,NKEY),(A(IA,K),IA=1,NWO),K=K1,IN)     E  13 SRTT   328
      IF (ENDFILE IT) 3,1                                               E  14 SRTT   329
C     TO GENERALIZE MRGR SO IT CAN MERGE ANY TWO FILES, J MUST BE       E  15 SRTT   330
C     COMPUTED EVERY TIME.  FOR ITS USE HERE J IS SET IN BLOCK.         E  16 SRTT   331
1     IF (KEYA(1,IN).EQ.IEND) IN=INA+J                                  E  17 SRTT   332
C     SAVE THE KEYS OFF THE LAST RECORD READ.                           E  18 SRTT   333
      DO 2 IK=1,NKEY                                                    E  19 SRTT   334
2     LAST(IK)=KEYA(IK,IN)                                              E  20 SRTT   335
C     SET POINTERS ON NO END-OF-FILE.                                   E  21 SRTT   336
      EOFRC=.FALSE.                                                     E  22 SRTT   337
      IF (INA.EQ.J) INA=IN                                              E  23 SRTT   338
      INB=IN-INA                                                        E  24 SRTT   339
      RETURN                                                            E  25 SRTT   340
C     SET POINTERS ON AN END-OF-FILE.                                   E  26 SRTT   341
3     EOFRC=.TRUE.                                                      E  27 SRTT   342
      IN=INA                                                            E  28 SRTT   343
      INB=0                                                             E  29 SRTT   344
      RETURN                                                            E  30 SRTT   345
      END                                                               E  31-SRTT   346
      SUBROUTINE SHOVUP                                                 F   1 SRTT   347
C     ******************************************************************* F   2 SRTT   348
C     THIS ROUTINE SHOVES THOSE RECORDS AND KEYS THAT ARE AFTER THE     F   3 SRTT   349
C     RECORDS THAT HAVE BEEN WRITTEN OUT UP--UNDER THOSE RECORDS THAT   F   4 SRTT   350
C     WERE NOT WRITTEN OUT.                                             F   5 SRTT   351
C     ******************************************************************* F   6 SRTT   352
      COMMON /PARM/ INA,INB,IN,NWO,NKEY,END,IND,IST,IA,IK,ISUM,IT1,IT2,I F   7 SRTT   353
     1T3,IT4,T1,T2,T3,J,MANY,MANYH                                      F   8 SRTT   354
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                  F   9 SRTT   355
      IN=INB                                                            F  10 SRTT   356
      IND=IN                                                            F  11 SRTT   357
      IF (IST.GT.IND) GO TO 3                                           F  12 SRTT   358
      DO 2 K=IST,IND                                                    F  13 SRTT   359
C     SHOVE THE KEYS UP.                                                F  14 SRTT   360
      DO 1 IK=1,NKEY                                                    F  15 SRTT   361
1     KEYA(IK,K)=KEYB(IK,K)                                             F  16 SRTT   362
C     SHOVE THE RECORDS UP.                                             F  17 SRTT   363
      DO 2 IA=1,NWO                                                     F  18 SRTT   364
2     A(IA,K)=B(IA,K)                                                   F  19 SRTT   365
3     IST=1                                                             F  20 SRTT   366
      INA=IN                                                            F  21 SRTT   367
      INB=0                                                             F  22 SRTT   368
      RETURN                                                            F  23 SRTT   369
      END                                                               F  24-SRTT   370
      SUBROUTINE PSHDWN                                                 G   1 SRTT   371
C     ******************************************************************* G   2 SRTT   372
C     PSHDWN USES A PUSH-DOWN LOGIC TO MERGE TWO SORTED ARRAYS.         G   3 SRTT   373
      COMMON /PARM/ INA,INB,IN,NWO,NKEY,END,IND,IST,IA,IK,ISUM,IT1,IT2,I G   4 SRTT   374
     1T3,IT4,T1,T2,T3,J,MANY,MANYH                                      G   5 SRTT   375
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                  G   6 SRTT   376
      DIMENSION S(8), KEY(5)                                            G   7 SRTT   377
      EQUIVALENCE (S,LOC)                                               G   8 SRTT   378
      IF (INB.EQ.0) RETURN                                              G   9 SRTT   379
      I1=1                                                              G  10 SRTT   380
      DO 9 I=1,INB                                                      G  11 SRTT   381
      IINA=INA+I                                                        G  12 SRTT   382
      IINAM=IINA-1                                                      G  13 SRTT   383
C     SAVE THE I-TH ELEMENT IN THE LOWER SORTED GROUP.                  G  14 SRTT   384
      DO 1 IK=1,NKEY                                                    G  15 SRTT   385
1     KEY(IK)=KEYA(IK,IINA)                                             G  16 SRTT   386
      DO 2 IA=1,NWO                                                     G  17 SRTT   387
2     S(IA)=A(IA,IINA)                                                  G  18 SRTT   388
C     FIND WHERE IT GOES.                                               G  19 SRTT   389
      DO 4 KAT=I1,IINAM                                                 G  20 SRTT   390
      DO 3 IK=1,NKEY                                                    G  21 SRTT   391
      IF (KEY(IK)-KEYA(IK,KAT)) 5,3,4                                   G  22 SRTT   392
```

Table 3.--CAN 2 computer program module 1--program SRTT - Concluded

```
3       CONTINUE                                                        G  23 SRTT   393
4       CONTINUE                                                        G  24 SRTT   394
        GO TO 10                                                        G  25 SRTT   395
5       I1=KAT+1                                                        G  26 SRTT   396
C       PUSH DOWN THE STACK BELOW WHERE IT GOES ONE WORD.               G  27 SRTT   397
        IPUSHR=KAT+IINA                                                 G  28 SRTT   398
        DO 7 IPUSH=KAT,IINAM                                            G  29 SRTT   399
        IR=IPUSHR-IPUSH                                                 G  30 SRTT   400
        IRM=IR-1                                                        G  31 SRTT   401
        DO 6 IK=1,NKEY                                                  G  32 SRTT   402
6       KEYA(IK,IR)=KEYA(IK,IRM)                                        G  33 SRTT   403
        DO 7 IA=1,NWO                                                   G  34 SRTT   404
7       A(IA,IR)=A(IA,IRM)                                              G  35 SRTT   405
C       INSERT THE I-TH ELEMENT IN ITS ORDERED SLOT.                    G  36 SRTT   406
        DO 8 IK=1,NKEY                                                  G  37 SRTT   407
8       KEYA(IK,KAT)=KEY(IK)                                            G  38 SRTT   408
        DO 9 IA=1,NWO                                                   G  39 SRTT   409
9       A(IA,KAT)=S(IA)                                                 G  40 SRTT   410
10      INA=MIN0(MANYH,IN)                                              G  41 SRTT   411
        INB=IN-INA                                                      G  42 SRTT   412
        RETURN                                                          G  43 SRTT   413
        END                                                             G  44-SRTT   414
        FUNCTION KEYSET (B,JMP)                                         H   1 SRTT   415
C       ********************************************************************** H   2 SRTT   416
        DIMENSION B(1)                                                  H   3 SRTT   417
        GO TO (1,2,3,4,5), JMP                                          H   4 SRTT   418
C          ACCT AND PROJ NO.                                            H   5 SRTT   419
1       DECODE (15,6,B(2) )KEYSET                                       H   6 SRTT   420
        RETURN                                                          H   7 SRTT   421
C          EMP NO.                                                      H   8 SRTT   422
2       DECODE (9,7,B(1) )KEYSET                                        H   9 SRTT   423
        RETURN                                                          H  10 SRTT   424
C          DATE                                                         H  11 SRTT   425
3       DECODE (17,9,B(1) )KEYSET                                       H  12 SRTT   426
        RETURN                                                          H  13 SRTT   427
C          WORK CODE                                                    H  14 SRTT   428
4       DECODE (8,8,B(3) )KEYSET                                        H  15 SRTT   429
        RETURN                                                          H  16 SRTT   430
C          HOURS                                                        H  17 SRTT   431
5       DECODE (13,10,B(3) )KEYSET                                      H  18 SRTT   432
        RETURN                                                          H  19 SRTT   433
C                                                                       H  20 SRTT   434
6       FORMAT (7X,R8)                                                  H  21 SRTT   435
7       FORMAT (R9)                                                     H  22 SRTT   436
8       FORMAT (4X,R4)                                                  H  23 SRTT   437
9       FORMAT (9X,R8)                                                  H  24 SRTT   438
10      FORMAT (8X,R5)                                                  H  25 SRTT   439
        END                                                             H  26-SRTT   440
```

Table 4.--CAN 2 computer program module 2--program SRTR

```
                                                                                    Reference number
      PROGRAM SRTR(TAPE1,TAPE2,TAPE3,TAPE4,OUTPUT,INPUT,TAPE7,TAPE8,TAPE  A    1 SRTR    2
     122,TAPE9=INPUT,TAPE12,TAPE14,PUNCH)                                 A    2 SRTR    3
C     ***************************************************************     A    3 SRTR    4
C     ---- TAPE 1     SORT FILE (BINARY) INPUT TO MRGR                     A    4 SRTR    5
C     ---- TAPE2      SORT FILE (BINARY) INPUT TO MRGR                     A    5 SRTR    6
C     ---- TAPE3      RAW BCD INPUT                                        A    6 SRTR    7
C     ---- TAPE22      YEARLY BIN. TAPE (INPUT)                            A    7 SRTR    8
C     ---- TAPE13      UPDATED YEARLY BIN. TAPE                            A    8 SRTR    9
C        TAPE14     SORTED ADD CDS                                        A    9 SRTR   10
C        TAPE12   SORTED DELETE CDS                                       A   10 SRTR   11
C     ***************************************************************     A   11 SRTR   12
      COMMON /PARM/ INA,INB,IN,NWO,NKEY,END,IND,IST,IA,IK,ISUM,IT1,IT2,I   A   12 SRTR   13
     1T3,IT4,T1,T2,T3,J,MANY,MANYH,LOOK                                    A   13 SRTR   14
      DIMENSION DUM(8), C(8,250), LEY(5,250), D(8,250), MEY(5,250)         A   14 SRTR   15
      COMMON /ZIP/ M1,J1,M4,M3,M2,J2,IHR,J3,MD,ICD(300),ND(300),NI(300),   A   15 SRTR   16
     1IF(300),KI,NCPA,NPA(10),NPP(10),IACCT(50,10),IPROJ(50,10),NCT(10)    A   16 SRTR   17
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                     A   17 SRTR   18
      DATA IT1,IT2,IT3,IT4/1,2,3,4/,END/10H9999999999/,MANYH/250/          A   18 SRTR   19
      INTEGER T1,T2,T3,T12,END,Z                                           A   19 SRTR   20
      LOGICAL EOFT3,EOFLOOK,EOFRC,EOFITP                                   A   20 SRTR   21
      EQUIVALENCE (END,IEND)                                               A   21 SRTR   22
      ND(300)=NI(300)=IF(300)=6HXXXXXX                                     A   22 SRTR   23
      DO 1 KI=1,299                                                        A   23 SRTR   24
C     READ IN EMPLOYEE NUMBERS AND CORRESPONDING NAMES                     A   24 SRTR   25
      READ (9,56) ICD(KI),ND(KI),NI(KI),IF(KI)                             A   25 SRTR   26
      IF (ENDFILE 9) 2,1                                                   A   26 SRTR   27
1     CONTINUE                                                             A   27 SRTR   28
C     ERROR   MORE THAN 299 EMPLOYEES, FIX DIMENSION  OF  ICD,ND,NI,IF     A   28 SRTR   29
      STOP 75                                                              A   29 SRTR   30
2     KI=KI-1                                                              A   30 SRTR   31
      N=0                                                                  A   31 SRTR   32
C        NO. OF PRORATED ACCT/PROJ                                         A   32 SRTR   33
      READ 52, NCPA                                                        A   33 SRTR   34
      IF (NCPA.GT.10) STOP 73                                              A   34 SRTR   35
      IF (NCPA.EQ.0) GO TO 5                                               A   35 SRTR   36
      DO 4 I=1,NCPA                                                        A   36 SRTR   37
C        PRORATED ACCT/PROJ                                                A   37 SRTR   38
      READ 53, NPA(I),NPP(I)                                               A   38 SRTR   39
3     N=N+1                                                                A   39 SRTR   40
      READ 53, IACCT(N,I),IPROJ(N,I)                                       A   40 SRTR   41
C        CHECK FOR END OF ACCT/PROJ OR PROJ TO BE PRORATED AGAINST         A   41 SRTR   42
      IF (IACCT(N,I).NE.4R+    .OR.IPROJ(N,I).NE.4R+    )GO TO 3           A   42 SRTR   43
      NCT(I)=N-1                                                           A   43 SRTR   44
      IF (N.GT.50) STOP 76                                                 A   44 SRTR   45
      N=0                                                                  A   45 SRTR   46
4     CONTINUE                                                             A   46 SRTR   47
5     MANY=MANYH+MANYH                                                     A   47 SRTR   48
C     COMPUTE THE NUMBER OF WORDS IN EACH RECORD                           A   48 SRTR   49
      NWD=IFIX(FLOAT(LOCF(KEYA)-LOCF(A))/FLOAT(MANY)+.00001)               A   49 SRTR   50
C     COMPUTE THE NUMBER OF KEY WORDS USED TO SORT BY.                     A   50 SRTR   51
      NKEY=IFIX(FLOAT(LOCF(KEYB)-LOCF(KEYA))/FLOAT(MANYH)+.00001)          A   51 SRTR   52
C     THIS ROUTINE GETS A BLOCK OF MANY RECORDS FROM T3 AND HAS A KEY      A   52 SRTR   53
C     SET FROM THE KEY WORDS                                               A   53 SRTR   54
C     SORT PERFORMS A DIRECT CORE SORT OF THAT BLOCK AND WRITES            A   54 SRTR   55
C     TWO BLOCKS OF MANYH (=.5*MANY) RECORDS PLUS ASSOCIATED KEY WORDS     A   55 SRTR   56
C     ONTO IT1.  THIS PROCESS IS CONTINUED UNTIL ALL OF THE RECORDS HAVE   A   56 SRTR   57
C     BEEN READ OFF OF T3.  NOTE THAT THIS ROUTINE ALTERNATELY WRITES      A   57 SRTR   58
C     THE SORTED BLOCKS ONTO IT1 AND IT2.                                  A   58 SRTR   59
C     INITILIZE TAPE POINTERS AND POSITIONS.                               A   59 SRTR   60
      T3=IT3                                                               A   60 SRTR   61
      T12=IT1+IT2                                                          A   61 SRTR   62
      T1=IT2                                                               A   62 SRTR   63
      REWIND IT1                                                           A   63 SRTR   64
      REWIND IT2                                                           A   64 SRTR   65
      END FILE IT1                                                         A   65 SRTR   66
      END FILE IT2                                                         A   66 SRTR   67
      REWIND IT1                                                           A   67 SRTR   68
      REWIND IT2                                                           A   68 SRTR   69
      REWIND IT3                                                           A   69 SRTR   70
      REWIND IT4                                                           A   70 SRTR   71
      EOFT3=.FALSE.                                                        A   71 SRTR   72
6     J=0                                                                  A   72 SRTR   73
C     SWITCH WRITE TAPE NUMBERS.                                           A   73 SRTR   74
      T1=T12-T1                                                            A   74 SRTR   75
C     J COUNTS THE NUMBER OF RECORDS IN EACH BLOCK.                        A   75 SRTR   76
7     J=J+1                                                                A   76 SRTR   77
C     READ IN ONE RECORD--NWD IS DEFINED BY THE DIMENSION ON A             A   77 SRTR   78
C     I.E. 8 IN THIS CASE.                                                 A   78 SRTR   79
```

Table 4.--CAN 2 computer program module 2--program SRTR - Continued

```
      READ (T3,57) (A(IA,J),IA=1,NWD)                                    A  79 SRTR    80
      IF (ENDFILE T3) 10,8                                               A  80 SRTR    81
C     FORM KEY WORDS--NKEY IS DEFINED BY THE DIMENSION ON KEY8           A  81 SRTR    82
C     I.E. 5 IN THIS CASE.                                               A  82 SRTR    83
8     DO 9 IK=1,NKEY                                                     A  83 SRTR    84
C     KEYSET RETURNS KEYS MAJOR TO MINOR.                                A  84 SRTR    85
9     KEYA(IK,J)=KEYSET(A(1,J),IK)                                       A  85 SRTR    86
C     GO TO GET NEXT RECORD IF THE BLOCK OF MANY RECORDS IS NOT FULL.    A  86 SRTR    87
      IF (J.LT.MANY) 7,11                                                A  87 SRTR    88
C     ALL OF THE RECORDS HAVE BEEN READ IN.                              A  88 SRTR    89
10    J=J-1                                                              A  89 SRTR    90
      IF (J.EQ.0) GO TO 14                                               A  90 SRTR    91
      EOFT3=.TRUE.                                                       A  91 SRTR    92
C     PERFORM DIRECT CORE SORT OF THE RECORDS BASED UPON THE KEY WORDS.  A  92 SRTR    93
11    CALL SORT                                                          A  93 SRTR    94
      IND=MIND(J,MANYH)                                                  A  94 SRTR    95
C     ARE THERE ENOUGH RECORDS TO WRITE A FULL BLOCK OF MANYH RECORDS.   A  95 SRTR    96
      IF (IND.LT.MANYH) GO TO 13                                         A  96 SRTR    97
C     WRITE FIRST FULL BLOCK OF MANYH RECORDS.                           A  97 SRTR    98
      WRITE (T1) ((KEYA(IK,K),IK=1,NKEY),(A(IA,K),IA=1,NWD),K=1,IND)     A  98 SRTR    99
      IF (IND.EQ.J) GO TO 14                                             A  99 SRTR   100
      IND=J-IND                                                          A 100 SRTR   101
      IF (IND.LT.MANYH) GO TO 12                                         A 101 SRTR   102
C     WRITE SECOND BLOCK OF MANYH RECORDS.                               A 102 SRTR   103
      WRITE (T1) ((KEYB(IK,K),IK=1,NKEY),(B(IA,K),IA=1,NWD),K=1,IND)     A 103 SRTR   104
      IF (EOFT3) 14,6                                                    A 104 SRTR   105
12    IUT=MANYH-IND                                                      A 105 SRTR   106
C     IF THE FIRST BLOCK IS NOT FULL, DUMMY FILL IT ON TAPE.             A 106 SRTR   107
      WRITE (T1) ((KEYB(IK,K),IK=1,NKEY),(B(IA,K),IA=1,NWD),K=1,IND),((E A 107 SRTR   108
     1ND,IK=1,NKEY),(END,IA=1,NWD),K=1,IUT)                              A 108 SRTR   109
      GO TO 14                                                           A 109 SRTR   110
13    IUT=MANYH-IND                                                      A 110 SRTR   111
C     IF THE SECOND BLOCK IS  NOT FULL, DUMMY FILL IT ON TAPE.           A 111 SRTR   112
      WRITE (T1) ((KEYA(IK,K),IK=1,NKEY),(A(IA,K),IA=1,NWD),K=1,IND),((E A 112 SRTR   113
     1ND,IK=1,NKEY),(END,IA=1,NWD),K=1,IUT)                              A 113 SRTR   114
14    IF (J.GT.MANYH) J=J-MANYH                                          A 114 SRTR   115
C     UNLOAD INPUT TAPE.                                                 A 115 SRTR   116
C     RETURN INPUT TAPE DRIVE TO SYSTEM - IT3 IS NOW USED AS A DISK FILE A 116 SRTR   117
      CALL RETURNS (T3)                                                  A 117 SRTR   118
      IRO=3                                                              A 118 SRTR   119
C     MERGE IT1 AND IT2 IN A BINARY FASHION ONTO EITHER IT1 OR IT3       A 119 SRTR   120
C     DEPENDING ON HOW MANY RECORDS THERE ARE.                           A 120 SRTR   121
C     MERGE MONTHLY DATA                                                 A 121 SRTR   122
      CALL MRGR (1,IRO)                                                  A 122 SRTR   123
C         SEE IF ANY PREVIOUS YEAR TO DATE TIME CDS                      A 123 SRTR   124
C         YES GO TO 41, NO GO TO 15                                      A 124 SRTR   125
      READ (22)                                                          A 125 SRTR   126
      IF (ENDFILE 22) 41,15                                              A 126 SRTR   127
15    IT2=22                                                             A 127 SRTR   128
      IF (LOOK.NE.3) GO TO 16                                            A 128 SRTR   129
      IT1=3                                                              A 129 SRTR   130
      IT3=1                                                              A 130 SRTR   131
16    IRO=2                                                              A 131 SRTR   132
C     OLD YEARLY DATA TAPE22                                             A 132 SRTR   133
C     MERGE OLD YEARLY DATA WITH MONTHLY DATA                            A 133 SRTR   134
C     MERGE IT1 AND IT2 IN A BINARY FASHION ONTO EITHER IT1 OR IT3       A 134 SRTR   135
C     DEPENDING ON HOW MANY RECORDS THERE ARE.                           A 135 SRTR   136
      CALL MRGR (1,IRO)                                                  A 136 SRTR   137
      I=1                                                                A 137 SRTR   138
C                                                                        A 138 SRTR   139
C     ADD   ,  DELETE ROUTINE                                            A 139 SRTR   140
C                                                                        A 140 SRTR   141
C     SEE IF ANY DELETE CDS                                              A 141 SRTR   142
C     NO  GO TO 17,YES  GO TO 18                                         A 142 SRTR   143
      READ (12) ((LEY(IK,K),IK=1,NKEY),(C(IA,K),IA=1,NWD),K=1,MANYH)     A 143 SRTR   144
      IF (ENDFILE 12) 17,18                                              A 144 SRTR   145
17    ITP=LOOK                                                           A 145 SRTR   146
      GO TO 35                                                           A 146 SRTR   147
18    ITP=3                                                              A 147 SRTR   148
C     LOOK EQ TAPE NUMBER OF UPDATED YEARLY TAPE                         A 148 SRTR   149
      IF (LOOK.EQ.3) ITP=1                                               A 149 SRTR   150
      REWIND 3                                                           A 150 SRTR   151
      REWIND 1                                                           A 151 SRTR   152
      JT=0                                                               A 152 SRTR   153
19    INA=0                                                              A 153 SRTR   154
C     READ NEW YEARLY TAPE                                               A 154 SRTR   155
      EOFLOOK=EOFRC(LOOK,DUM)                                            A 155 SRTR   156
      IF (EOFLOOK) 20,21                                                 A 156 SRTR   157
20    IF (I.EQ.10HEND DELETE) GO TO 33                                   A 157 SRTR   158
```

Table 4.--CAN 2 computer program module 2--program SRTR - Continued

```
C     ERROR IN DELETE CDS                                                    A 158 SRTR  159
      PRINT 58, (C(IA,I),IA=1,NWD)                                           A 159 SRTR  160
      GO TO 33                                                               A 160 SRTR  161
C     DELETE ROUTINE                                                         A 161 SRTR  162
21    DO 32 Z=1,INA                                                          A 162 SRTR  163
      IF (I.EQ.10HEND DELETE) GO TO 29                                       A 163 SRTR  164
C     CHECK FOR PADDED BLOCK                                                 A 164 SRTR  165
22    IF (LEY(1,I).NE.IEND) GO TO 23                                         A 165 SRTR  166
C     END OF DELETE CDS                                                      A 166 SRTR  167
      I=10HEND DELETE                                                        A 167 SRTR  168
      GO TO 29                                                               A 168 SRTR  169
C     COMPARE DELETE CD TO CD ON UPDATED YEARLY TAPE                         A 169 SRTR  170
23    DO 26 N=1,5                                                            A 170 SRTR  171
C     CDS DO NOT COMPARE GO TO 29                                            A 171 SRTR  172
      IF (KEYA(N,Z).LT.LEY(N,I)) GO TO 29                                    A 172 SRTR  173
C     CDS  COMPARE GO TO 26                                                  A 173 SRTR  174
      IF (KEYA(N,Z).EQ.LEY(N,I)) GO TO 26                                    A 174 SRTR  175
C     ERROR ON DELETE CDS                                                    A 175 SRTR  176
      PRINT 58, (C(IA,I),IA=1,NWD)                                           A 176 SRTR  177
C     GET NEXT DELETE CD IF ANY                                              A 177 SRTR  178
      I=I+1                                                                  A 178 SRTR  179
C     NOTE----ALL TAPES WRITTEN IN BLOCKS OF 250 CDS(BINARY)                 A 179 SRTR  180
      IF (I.LE.MANYH) GO TO 22                                               A 180 SRTR  181
      READ (12) ((LEY(IK,K),IK=1,NKEY),(C(IA,K),IA=1,NWD),K=1,MANYH)         A 181 SRTR  182
      IF (ENDFILE 12) 24,25                                                  A 182 SRTR  183
24    I=10HEND DELETE                                                        A 183 SRTR  184
      GO TO 29                                                               A 184 SRTR  185
25    I=1                                                                    A 185 SRTR  186
      GO TO 22                                                               A 186 SRTR  187
26    CONTINUE                                                               A 187 SRTR  188
C     GET NEXT DELETE CD IF ANY                                              A 188 SRTR  189
      I=I+1                                                                  A 189 SRTR  190
      IF (I.LE.MANYH) GO TO 32                                               A 190 SRTR  191
      READ (12) ((LEY(IK,K),IK=1,NKEY),(C(IA,K),IA=1,NWD),K=1,MANYH)         A 191 SRTR  192
      IF (ENDFILE 12) 27,28                                                  A 192 SRTR  193
27    I=10HEND DELETE                                                        A 193 SRTR  194
      GO TO 32                                                               A 194 SRTR  195
28    I=1                                                                    A 195 SRTR  196
      GO TO 32                                                               A 196 SRTR  197
C     CREATE NEW YEARLY TAPE MINUS DELETE CDS                                A 197 SRTR  198
29    JT=JT+1                                                                A 198 SRTR  199
      DO 30 LL=1,NKEY                                                        A 199 SRTR  200
30    MEY(LL,JT)=KEYA(LL,Z)                                                  A 200 SRTR  201
      DO 31 LL=1,NWD                                                         A 201 SRTR  202
31    D(LL,JT)=A(LL,Z)                                                       A 202 SRTR  203
      IF (JT.LT.MANYH) GO TO 32                                              A 203 SRTR  204
      WRITE (ITP) ((MEY(IK,K),IK=1,NKEY),(D(IA,K),IA=1,NWD),K=1,MANYH)       A 204 SRTR  205
      JT=0                                                                   A 205 SRTR  206
32    CONTINUE                                                               A 206 SRTR  207
      GO TO 19                                                               A 207 SRTR  208
C     CHECK IF LESS THAN MANYH CDS IN BLOCK,IF YES PAD WITH 9*S              A 208 SRTR  209
33    IF (JT.EQ.0) GO TO 34                                                  A 209 SRTR  210
      IUT=MANYH-JT                                                           A 210 SRTR  211
      WRITE (ITP) ((MEY(IK,K),IK=1,NKEY),(D(IA,K),IA=1,NWD),K=1,JT),((EN     A 211 SRTR  212
     1D,IK=1,NKEY),(END,IA=1,NWD),K=1,IUT)                                   A 212 SRTR  213
34    END FILE ITP                                                           A 213 SRTR  214
C     SEE IF ANY ADD CDS                                                     A 214 SRTR  215
C         YES  GO TO 39 , NO GO TO 36                                        A 215 SRTR  216
35    READ (14)                                                              A 216 SRTR  217
      IF (ENDFILE 14) 36,39                                                  A 217 SRTR  218
36    REWIND ITP                                                             A 218 SRTR  219
      INA=0                                                                  A 219 SRTR  220
      EOFITP=EOFRC(ITP,DUM)                                                  A 220 SRTR  221
      IF (EOFITP) 37,38                                                      A 221 SRTR  222
37    STOP 7                                                                 A 222 SRTR  223
C     PRINT REPORT                                                           A 223 SRTR  224
38    CALL BIN2BCD (ITP,DUM)                                                 A 224 SRTR  225
      GO TO 41                                                               A 225 SRTR  226
39    IT2=14                                                                 A 226 SRTR  227
      IF (ITP.NE.3) GO TO 40                                                 A 227 SRTR  228
      IT1=3                                                                  A 228 SRTR  229
      IT3=1                                                                  A 229 SRTR  230
40    IRO=4                                                                  A 230 SRTR  231
C     MERGE UPDATED YEARLY TAPE MINUS DELETE CDS WITH ADD CDS                A 231 SRTR  232
C     MERGE IT1 AND IT2 IN A BINARY FASHION ONTO EITHER IT1 OR IT3           A 232 SRTR  233
C     DEPENDING ON HOW MANY RECORDS THERE ARE.                               A 233 SRTR  234
```

Table 4.--CAN 2 computer program module 2--program SRTR - Continued

```
      CALL MRGR (1,IRO)                                                  A 234 SRTR  235
41    REWIND 7                                                           A 235 SRTR  236
      REWIND 8                                                           A 236 SRTR  237
      IF (LOOK.NE.3) GO TO 45                                            A 237 SRTR  238
      REWIND 3                                                           A 238 SRTR  239
      REWIND 1                                                           A 239 SRTR  240
42    READ (3) ((LEY(IK,K),IK=1,NKEY),(C(IA,K),IA=1,NWD),K=1,MANYH)      A 240 SRTR  241
      IF (ENDFILE 3) 44,43                                               A 241 SRTR  242
43    WRITE (1) ((LEY(IK,K),IK=1,NKEY),(C(IA,K),IA=1,NWD),K=1,MANYH)     A 242 SRTR  243
      GO TO 42                                                           A 243 SRTR  244
44    END FILE 1                                                         A 244 SRTR  245
45    CONTINUE                                                           A 245 SRTR  246
      L=1                                                                A 246 SRTR  247
      REWIND 1                                                           A 247 SRTR  248
      REWIND 2                                                           A 248 SRTR  249
46    INA=0                                                              A 249 SRTR  250
      EOFLOOK=EOFRC(1,DUM)                                               A 250 SRTR  251
      IF (EOFLOOK) 51,47                                                 A 251 SRTR  252
47    DO 50 J=1,INA                                                      A 252 SRTR  253
      DECODE (9,54,A(1,J) )ITMP                                          A 253 SRTR  254
      IF (ITMP.EQ.ICD(L)) GO TO 49                                       A 254 SRTR  255
      DO 48 L=1,KI                                                       A 255 SRTR  256
      IF (ITMP.EQ.ICD(L)) GO TO 49                                       A 256 SRTR  257
48    CONTINUE                                                           A 257 SRTR  258
      L=300                                                              A 258 SRTR  259
49    WRITE (2,55) (A(IT,J),IT=1,4),ND(L),NI(L),IF(L)                    A 259 SRTR  260
50    CONTINUE                                                           A 260 SRTR  261
      GO TO 46                                                           A 261 SRTR  262
51    END FILE 2                                                         A 262 SRTR  263
C                                                                        A 263 SRTR  264
52    FORMAT (I5)                                                        A 264 SRTR  265
53    FORMAT (R4,R4)                                                     A 265 SRTR  266
54    FORMAT (R9)                                                        A 266 SRTR  267
55    FORMAT (5A1J,A4,2X,A2,21X,1H1)                                     A 267 SRTR  268
56    FORMAT (R9,7X,A10,A4,1X,A2)                                        A 268 SRTR  269
57    FORMAT (8A1J)                                                      A 269 SRTR  270
58    FORMAT (20X,8A10)                                                  A 270 SRTR  271
      END                                                                A 271-SRTR  272
      SUBROUTINE SORT                                                    B   1 SRTR  273
C     ********************************************************************** B   2 SRTR  274
C     THIS ROUTINE PERFORMS A DIRECT CORE SORT ON THE J RECORDS STORED   B   3 SRTR  275
C     IN A AND B BASED ON THE KEY WORDS STORED IN KEYA AND KEYB.         B   4 SRTR  276
C     THIS ROUTINE DOES NOT PRESERVE A SUBSORT.                          B   5 SRTR  277
C     IT PERFORMS ITS JOB IN BUBBLE SORT FASHION.                        B   6 SRTR  278
C     ********************************************************************** B   7 SRTR  279
      COMMON /PARM/ INA,INB,IN,NWD,NKEY,END,IND,IST,IA,IK,ISUM,IT1,IT2,I B   8 SRTR  280
     1T3,IT4,T1,T2,T3,J,MANY,MANYH                                       B   9 SRTR  281
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                   B  10 SRTR  282
      EQUIVALENCE (ISV,SAV)                                              B  11 SRTR  283
      IF (J.EQ.1) RETURN                                                 B  12 SRTR  284
      JM=J-1                                                             B  13 SRTR  285
      DO 6 I=1,JM                                                        B  14 SRTR  286
      IP=I+1                                                             B  15 SRTR  287
      LOC=I                                                              B  16 SRTR  288
C     THE 3 LOOP LOCATES THE RECORD THAT GOES NEXT (THE LOC-TH RECORD)   B  17 SRTR  289
C     FROM THE REMAINING RECORDS.                                        B  18 SRTR  290
      DO 3 L=IP,J                                                        B  19 SRTR  291
      DO 1 IK=1,NKEY                                                     B  20 SRTR  292
      IF (KEYA(IK,L)-KEYA(IK,LOC)) 2,1,3                                 B  21 SRTR  293
1     CONTINUE                                                           B  22 SRTR  294
      GO TO 3                                                            B  23 SRTR  295
2     LOC=L                                                              B  24 SRTR  296
3     CONTINUE                                                           B  25 SRTR  297
C     THE 4 LOOP SWITCHES THE KEY THAT IS IN THE I-TH SLOT WITH THE ONE  B  26 SRTR  298
C     IN THE LOC-TH SLOT.                                                B  27 SRTR  299
      DO 4 IK=1,NKEY                                                     B  28 SRTR  300
      ISV=KEYA(IK,I)                                                     B  29 SRTR  301
      KEYA(IK,I)=KEYA(IK,LOC)                                            B  30 SRTR  302
4     KEYA(IK,LOC)=ISV                                                   B  31 SRTR  303
C     THE 5 LOOP SWITCHES THE RECORD THAT IS IN THE I-TH SLOT WITH THE   B  32 SRTR  304
C     ONE IN THE LOC-TH SLOT.                                            B  33 SRTR  305
      DO 5 IA=1,NWD                                                      B  34 SRTR  306
      SAV=A(IA,I)                                                        B  35 SRTR  307
      A(IA,I)=A(IA,LOC)                                                  B  36 SRTR  308
5     A(IA,LOC)=SAV                                                      B  37 SRTR  309
6     CONTINUE                                                           B  38 SRTR  310
      RETURN                                                             B  39 SRTR  311
      END                                                                B  40-SRTR  312
```

Table 4.--CAN 2 computer program module 2--program SRTR - Continued

```
      SUBROUTINE MRGR (INMGR,IZ)                                        C    1 SRTR   313
C     ******************************************************************C    2 SRTR   314
C     MRGR TAKES THE N BLOCKS OF SORTED RECORDS OFF TAPES T1 AND T2     C    3 SRTR   315
C     AND WRITES N/2 BLOCKS OF SORTED RECORDS ONTO TAPES T3 AND T4.     C    4 SRTR   316
C     MRGR MAY NOT PRESERVE A SUBSORT.                                  C    5 SRTR   317
C     ******************************************************************C    6 SRTR   318
      COMMON /PARM/ INA,INB,IN,NWD,NKEY,END,IND,IST,IA,IK,ISUM,IT1,IT2,I C    7 SRTR   319
     1T3,IT4,T1,T2,T3,J,MANY,MANYH,LOOK                                 C    8 SRTR   320
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                  C    9 SRTR   321
      LOGICAL EOFRC,EOFT1,EOFT2                                         C   10 SRTR   322
      INTEGER T1,T2,T3,T13,T24,TSS,T34                                  C   11 SRTR   323
      DIMENSION KEYALT(5), KEYBLT(5), KEYWLT(5)                         C   12 SRTR   324
      T1=IT1                                                            C   13 SRTR   325
      T2=IT2                                                            C   14 SRTR   326
      T3=IT3                                                            C   15 SRTR   327
      T34=IT3+IT4                                                       C   16 SRTR   328
      T13=IT1+IT3                                                       C   17 SRTR   329
      T24=IT2+IT4                                                       C   18 SRTR   330
      TSS=T13+T24                                                       C   19 SRTR   331
      IF (IZ.EQ.2.OR.IZ.EQ.4) GO TO 2                                   C   20 SRTR   332
1     END FILE T1                                                       C   21 SRTR   333
      END FILE T2                                                       C   22 SRTR   334
2     REWIND IT1                                                        C   23 SRTR   335
      REWIND IT2                                                        C   24 SRTR   336
      REWIND IT3                                                        C   25 SRTR   337
      REWIND IT4                                                        C   26 SRTR   338
      INA=0                                                             C   27 SRTR   339
C     READ A BLOCK OF MANYH RECORDS OFF TAPE T1 SAVING THE KEYS FROM    C   28 SRTR   340
C     THE LAST RECORD READ IN KEYALT.                                   C   29 SRTR   341
      EOFT1=EOFRC(T1,KEYALT)                                            C   30 SRTR   342
C     READ A BLOCK OF MANYH RECORDS OFF TAPE T2 SAVING THE KEYS FROM    C   31 SRTR   343
C     THE LAST RECORD READ IN KEYBLT.                                   C   32 SRTR   344
      EOFT2=EOFRC(T2,KEYBLT)                                            C   33 SRTR   345
C     IF THERE IS NO DATA ON EITHER T1 OR T2, STOP.                     C   34 SRTR   346
      IF (EOFT1.AND.EOFT2) STOP 5                                       C   35 SRTR   347
C     IF THERE IS DATA ON ONLY ONE TAPE, MERGING IS DONE.               C   36 SRTR   348
C     NOTE  MANYH RECORDS HAVE BEEN READ OFF.                           C   37 SRTR   349
      IF (EOFT1.OR.EOFT2) GO TO 22                                      C   38 SRTR   350
      ISUM=0                                                            C   39 SRTR   351
C     PERFORM A DIRECT CORE MERGE OF THE TWO BLOCKS OF MANYH RECORDS.   C   40 SRTR   352
      CALL PSHDWN                                                       C   41 SRTR   353
      IF (IN.LT.MANYH) GO TO 19                                         C   42 SRTR   354
3     IST=1                                                             C   43 SRTR   355
      IND=MANYH                                                         C   44 SRTR   356
4     J1=IST                                                            C   45 SRTR   357
C     WRITE OUT A FULL BLOCK OF MANYH RECORDS AND KEYS STARTING FROM IST C   46 SRTR   358
      WRITE (T3) ((KEYA(IK,K),IK=1,NKEY),(A(IA,K),IA=1,NWD),K=IST,IND)  C   47 SRTR   359
C     SAVE THE KEYS OF THE LAST RECORD JUST WRITTEN OUT.                C   48 SRTR   360
      DO 5 IK=1,NKEY                                                    C   49 SRTR   361
5     KEYWLT(IK)=KEYA(IK,IND)                                           C   50 SRTR   362
C     ISUM COUNTS THE NUMBER OF RECORDS IN THE SORT--HOWEVER IT IS NOT  C   51 SRTR   363
C     NECESSARY FOR THE SORT.                                           C   52 SRTR   364
      ISUM=ISUM+MANYH                                                   C   53 SRTR   365
C     SHOVE THOSE RECORDS FROM IND+1 TO IN UP TO IST+1 TO IST+(IN-IND). C   54 SRTR   366
      CALL SHOVUP                                                       C   55 SRTR   367
C     IF KEYALT IS LESS THAT KEYBLT READ OFF TAPE T1, ELSE READ OFF     C   56 SRTR   368
C     TAPE T2                                                           C   57 SRTR   369
      DO 6 IK=1,NKEY                                                    C   58 SRTR   370
      IF (KEYALT(IK)-KEYBLT(IK)) 14,6,7                                 C   59 SRTR   371
6     CONTINUE                                                          C   60 SRTR   372
      GO TO 14                                                          C   61 SRTR   373
C     IF ALL THE RECORDS ON T2 HAVE BEEN READ (EOF T2 = .TRUE.)         C   62 SRTR   374
C     READ OFF TAPE T1.                                                 C   63 SRTR   375
7     IF (EOFT2) 20,8                                                   C   64 SRTR   376
C     READ IN A NEW BLOCK OF RECORDS.                                   C   65 SRTR   377
8     EOFT2=EOFRC(T2,KEYBLT)                                            C   66 SRTR   378
      IF (EOFT2) 20,9                                                   C   67 SRTR   379
C     MERGE THE OLD BLOCK WITH THE NEW BLOCK.                           C   68 SRTR   380
9     CALL PSHDWN                                                       C   69 SRTR   381
      IF (IN.LT.MANYH) GO TO 16                                         C   70 SRTR   382
      LOOK=IN8+1                                                        C   71 SRTR   383
      IF (J1.GT.LOOK) GO TO 12                                          C   72 SRTR   384
C     FIND IST  -  THE BEGINNING INDEX FOR THE WRITE.                   C   73 SRTR   385
      DO 11 IST=J1,LOOK                                                 C   74 SRTR   386
      DO 10 IK=1,NKEY                                                   C   75 SRTR   387
      IF (KEYWLT(IK)-KEYA(IK,IST)) 13,10,11                             C   76 SRTR   388
10    CONTINUE                                                          C   77 SRTR   389
```

Table 4.--CAN 2 computer program module 2--program SRTR - Continued

```
      GO TO 13                                                          C  78 SRTR   390
11    CONTINUE                                                          C  79 SRTR   391
C     CAN NO LONGER WRITE ON THIS TAPE WITH THE RECORDS BEING IN ORDER  C  80 SRTR   392
C     SWITCH TO OTHER TAPE.                                             C  81 SRTR   393
12    T3=T34-T3                                                         C  82 SRTR   394
      GO TO 3                                                           C  83 SRTR   395
C     COMPUTE END INDEX OF WRITE.                                       C  84 SRTR   396
13    IND=IST+MANYH-1                                                   C  85 SRTR   397
      GO TO 4                                                           C  86 SRTR   398
C     IF ALL THE RECORDS ON T1 HAVE BEEN READ, READ OFF T2.             C  87 SRTR   399
14    IF (EOFT1) 21,15                                                  C  88 SRTR   400
C     READ A NEW BLOCK OF RECORDS.                                      C  89 SRTR   401
15    EOFT1=EOFRC(T1,KEYALT)                                            C  90 SRTR   402
      IF (EOFT1) 21,9                                                   C  91 SRTR   403
C     CAN THE LAST BLOCK OF RECORDS BE WRITTEN ON THE CURRENT TAPE,     C  92 SRTR   404
C     NO GOES TO 18, YES GOES TO 19.                                    C  93 SRTR   405
16    DO 17 IK=1,NKEY                                                   C  94 SRTR   406
      IF (KEYHLT(IK)-KEYA(IK,1)) 19,17,18                               C  95 SRTR   407
17    CONTINUE                                                          C  96 SRTR   408
      GO TO 19                                                          C  97 SRTR   409
18    T3=T34-T3                                                         C  98 SRTR   410
19    IUT=MANYH-IN                                                      C  99 SRTR   411
      IST=1                                                             C 100 SRTR   412
      IND=IN                                                            C 101 SRTR   413
C     IF THE LAST BLOCK IS NOT FULL, DUMMY WRITE A FULL BLOCK.          C 102 SRTR   414
      IF (IUT.GT.0) WRITE (T3) ((KEYA(IK,K),IK=1,NKEY),(A(IA,K),IA=1,NWD C 103 SRTR   415
     1),K=IST,IND),((END,IK=1,NKEY),(END,IA=1,NWD),K=1,IUT)             C 104 SRTR   416
C     IF THE LAST BLOCK IS FULL, WRITE IT OUT.                          C 105 SRTR   417
      IF (IUT.EQ.0) WRITE (T3) ((KEYA(IK,K),IK=1,NKEY),(A(IA,K),IA=1,NWD C 106 SRTR   418
     1),K=IST,IND)                                                      C 107 SRTR   419
      ISUM=ISUM+IN                                                      C 108 SRTR   420
C     SWITCH TAPE FILE NUMBERS.                                         C 109 SRTR   421
      T3=T1                                                             C 110 SRTR   422
      T1=T13-T1                                                         C 111 SRTR   423
      T2=T24-T2                                                         C 112 SRTR   424
      T34=TSS-T34                                                       C 113 SRTR   425
      GO TO 1                                                           C 114 SRTR   426
C     IS T1 EMPTY.                                                      C 115 SRTR   427
20    IF (EOFT1) 16,15                                                  C 116 SRTR   428
C     IS T2 EMPTY.                                                      C 117 SRTR   429
21    IF (EOFT2) 16,8                                                   C 118 SRTR   430
22    LOOK=T1                                                           C 119 SRTR   431
      IF (EOFT1) LOOK=T2                                                C 120 SRTR   432
C     REPORT PRINTED ONLY ON MONTHLY DATA AND ON YEARLY DATA            C 121 SRTR   433
C     PLUS ADD CARDS MINUS DELETE CARDS   I.E. IZ.NE.2                  C 122 SRTR   434
      IF (IZ.NE.2) GO TO 23                                             C 123 SRTR   435
C     UNLOAD OLD YEARLY TAPE                                            C 124 SRTR   436
C     RETURN TAPE22 TO SYSTEM, TAPE22 NOW DISK FILE                     C 125 SRTR   437
      CALL RETURNS (22)                                                 C 126 SRTR   438
      GO TO 24                                                          C 127 SRTR   439
C     LOOK IS THE FINAL OUTPUT TAPE, EITHER IT1 OR IT3.                 C 128 SRTR   440
C     RECORDS ARE NOW SORTED AND READY FOR CONVERSION FROM BINARY       C 129 SRTR   441
C     WRITTEN TAPES TO USABLE FORM.                                     C 130 SRTR   442
23    CALL BIN2BCD (LOOK,INMGR)                                         C 131 SRTR   443
24    CONTINUE                                                          C 132 SRTR   444
      RETURN                                                            C 133 SRTR   445
      END                                                               C 134-SRTR   446
      LOGICAL FUNCTIONEOFRC(IT,LAST)                                    D   1 SRTR   447
C     ****************************************************************  D   2 SRTR   448
C     EOF RC READS A BLOCK OF NWD RECORDS OFF IT.                       D   3 SRTR   449
      COMMON /PARM/ INA,INB,IN,NWD,NKEY,END,IND,IST,IA,IK,ISUM,IT1,IT2,I D   4 SRTR   450
     1T3,IT4,T1,T2,T3,J,MANY,MANYH                                      D   5 SRTR   451
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                  D   6 SRTR   452
      DIMENSION LAST(1)                                                 D   7 SRTR   453
      INTEGER END                                                       D   8 SRTR   454
      EQUIVALENCE (END,IEND)                                            D   9 SRTR   455
      K1=INA+1                                                          D  10 SRTR   456
      IN=K1+MANYH-1                                                     D  11 SRTR   457
C     READ A BLOCK.                                                     D  12 SRTR   458
      READ (IT) ((KEYA(IK,K),IK=1,NKEY),(A(IA,K),IA=1,NWD),K=K1,IN)     D  13 SRTR   459
      IF (ENDFILE IT) 6,1                                               D  14 SRTR   460
1     IF (KEYA(1,IN).NE.IEND) GO TO 4                                   D  15 SRTR   461
      DO 2 K=K1,IN                                                      D  16 SRTR   462
      IF (KEYA(1,K).EQ.IEND) GO TO 3                                    D  17 SRTR   463
2     CONTINUE                                                          D  18 SRTR   464
C     IN EQ LOCATION OF LAST RECORD IN BLOCK WHICH IS NOT PADDED        D  19 SRTR   465
3     IN=K-1                                                            D  20 SRTR   466
```

Table 4.--CAN 2 computer program module 2--program SRTR - Continued

```
C     SAVE THE KEYS OFF THE LAST RECORD READ.                                  D  21 SRTR   467
4     DO 5 IK=1,NKEY                                                           D  22 SRTR   468
5     LAST(IK)=KEYA(IK,IN)                                                     D  23 SRTR   469
C     SET POINTERS ON NO END-OF-FILE.                                          D  24 SRTR   470
      EOFRC=.FALSE.                                                            D  25 SRTR   471
      IF (INA.EQ.0) INA=IN                                                     D  26 SRTR   472
      INB=IN-INA                                                               D  27 SRTR   473
      RETURN                                                                   D  28 SRTR   474
C     SET POINTERS ON AN END-OF-FILE.                                          D  29 SRTR   475
6     EOFRC=.TRUE.                                                             D  30 SRTR   476
      IN=INA                                                                   D  31 SRTR   477
      INB=0                                                                    D  32 SRTR   478
      RETURN                                                                   D  33 SRTR   479
      END                                                                      D  34-SRTR   480
      SUBROUTINE SHOVUP                                                        E   1 SRTR   481
C     ************************************************************************ E   2 SRTR   482
C     THIS ROUTINE SHOVES THOSE RECORDS AND KEYS THAT ARE AFTER THE            E   3 SRTR   483
C     RECORDS THAT HAVE BEEN WRITTEN OUT UP UNDER THOSE RECORDS THAT           E   4 SRTR   484
C     WERE NOT WRITTEN OUT.                                                    E   5 SRTR   485
C     ************************************************************************ E   6 SRTR   486
      COMMON /PARM/ INA,INB,IN,NWD,NKEY,END,IND,IST,IA,IK,ISUM,IT1,IT2,I       E   7 SRTR   487
     1T3,IT4,T1,T2,T3,J,MANY,MANYH                                             E   8 SRTR   488
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                         E   9 SRTR   489
      IN=INB                                                                   E  10 SRTR   490
      IND=IN                                                                   E  11 SRTR   491
      IF (IST.GT.IND) GO TO 3                                                  E  12 SRTR   492
      DO 2 K=IST,IND                                                           E  13 SRTR   493
C     SHOVE THE KEYS UP.                                                       E  14 SRTR   494
      DO 1 IK=1,NKEY                                                           E  15 SRTR   495
1     KEYA(IK,K)=KEYB(IK,K)                                                    E  16 SRTR   496
C     SHOVE THE RECORDS UP.                                                    E  17 SRTR   497
      DO 2 IA=1,NWD                                                            E  18 SRTR   498
2     A(IA,K)=B(IA,K)                                                          E  19 SRTR   499
3     IST=1                                                                    E  20 SRTR   500
      INA=IN                                                                   E  21 SRTR   501
      INB=0                                                                    E  22 SRTR   502
      RETURN                                                                   E  23 SRTR   503
      END                                                                      E  24-SRTR   504
      SUBROUTINE PSHDWN                                                        F   1 SRTR   505
C     ************************************************************************ F   2 SRTR   506
C     PSHDWN USES A PUSH-DOWN LOGIC TO MERGE TWO SORTED ARRAYS.                F   3 SRTR   507
      COMMON /PARM/ INA,INB,IN,NWD,NKEY,END,IND,IST,IA,IK,ISUM,IT1,IT2,I       F   4 SRTR   508
     1T3,IT4,T1,T2,T3,J,MANY,MANYH                                             F   5 SRTR   509
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                         F   6 SRTR   510
      DIMENSION S(8), KEY(5)                                                   F   7 SRTR   511
      EQUIVALENCE (S,LOC)                                                      F   8 SRTR   512
      IF (INB.EQ.0) RETURN                                                     F   9 SRTR   513
      I1=1                                                                     F  10 SRTR   514
      DO 9 I=1,INB                                                             F  11 SRTR   515
      IINA=INA+I                                                               F  12 SRTR   516
      IINAM=IINA-1                                                             F  13 SRTR   517
C     SAVE THE I-TH ELEMENT IN THE LOWER SORTED GROUP.                         F  14 SRTR   518
      DO 1 IK=1,NKEY                                                           F  15 SRTR   519
1     KEY(IK)=KEYA(IK,IINA)                                                    F  16 SRTR   520
      DO 2 IA=1,NWD                                                            F  17 SRTR   521
2     S(IA)=A(IA,IINA)                                                         F  18 SRTR   522
C     FIND WHERE IT GOES.                                                      F  19 SRTR   523
      DO 4 KAT=I1,IINAM                                                        F  20 SRTR   524
      DO 3 IK=1,NKEY                                                           F  21 SRTR   525
      IF (KEY(IK)-KEYA(IK,KAT)) 5,3,4                                          F  22 SRTR   526
3     CONTINUE                                                                 F  23 SRTR   527
4     CONTINUE                                                                 F  24 SRTR   528
      GO TO 10                                                                 F  25 SRTR   529
5     I1=KAT+1                                                                 F  26 SRTR   530
      IPUSHR=KAT+IINA                                                          F  27 SRTR   531
C     PUSH DOWN THE STACK BELOW WHERE IT GOES ONE WORD.                        F  28 SRTR   532
      DO 7 IPUSH=KAT,IINAM                                                     F  29 SRTR   533
      IR=IPUSHR-IPUSH                                                          F  30 SRTR   534
      IRM=IR-1                                                                 F  31 SRTR   535
      DO 6 IK=1,NKEY                                                           F  32 SRTR   536
6     KEYA(IK,IR)=KEYA(IK,IRM)                                                 F  33 SRTR   537
      DO 7 IA=1,NWD                                                            F  34 SRTR   538
7     A(IA,IR)=A(IA,IRM)                                                       F  35 SRTR   539
C     INSERT THE I-TH ELEMENT IN ITS ORDERED SLOT.                             F  36 SRTR   540
      DO 8 IK=1,NKEY                                                           F  37 SRTR   541
8     KEYA(IK,KAT)=KEY(IK)                                                     F  38 SRTR   542
      DO 9 IA=1,NWD                                                            F  39 SRTR   543
9     A(IA,KAT)=S(IA)                                                          F  40 SRTR   544
10    INA=MIN0(MANYH,IN)                                                       F  41 SRTR   545
      INB=IN-INA                                                               F  42 SRTR   546
      RETURN                                                                   F  43 SRTR   547
      END                                                                      F  44-SRTR   548
```

Table 4.--CAN 2 computer program module 2--program SRTR - Continued

```
      FUNCTION KEYSET (B,JMP)                                                  G    1 SRTR   549
C     ***********************************************************************  G    2 SRTR   550
      DIMENSION B(1)                                                           G    3 SRTR   551
      GO TO (1,2,3,4,5), JMP                                                   G    4 SRTR   552
C        ACCT AND PROJ NO.                                                     G    5 SRTR   553
1     DECODE (15,6,B(2) )KEYSET                                                G    6 SRTR   554
      RETURN                                                                   G    7 SRTR   555
C        EMP NO.                                                               G    8 SRTR   556
2     DECODE (9,7,B(1) )KEYSET                                                 G    9 SRTR   557
      RETURN                                                                   G   10 SRTR   558
C        DATE                                                                  G   11 SRTR   559
3     DECODE (17,9,B(1) )KEYSET                                                G   12 SRTR   560
      RETURN                                                                   G   13 SRTR   561
C        WORK CODE                                                             G   14 SRTR   562
4     DECODE (8,8,B(3) )KEYSET                                                 G   15 SRTR   563
      RETURN                                                                   G   16 SRTR   564
C        HOURS                                                                 G   17 SRTR   565
5     DECODE (13,10,B(3) )KEYSET                                               G   18 SRTR   566
      RETURN                                                                   G   19 SRTR   567
C                                                                              G   20 SRTR   568
6     FORMAT (7X,R8)                                                           G   21 SRTR   569
7     FORMAT (R9)                                                              G   22 SRTR   570
8     FORMAT (4X,R4)                                                           G   23 SRTR   571
9     FORMAT (9X,R8)                                                           G   24 SRTR   572
10    FORMAT (8X,R5)                                                           G   25 SRTR   573
      END                                                                      G   26-SRTR   574
      SUBROUTINE BIN2BCD (ITP,INMGR)                                           H    1 SRTR   575
C     ***********************************************************************  H    2 SRTR   576
C     PRINTS MONTHLY AND YEARLY REPORT ON TIME CDS                             H    3 SRTR   577
C     TAPE8 ---MONTHLY AND YEARLY REPORT OF TOTAL HRS SPENT ON EACH            H    4 SRTR   578
C     1. ON EACH ACCT NO.  PART 1 AND PART 2                                   H    5 SRTR   579
C     2. ON EACH PROJECT                                                       H    6 SRTR   580
C     (ACCT NO. BROKEN UP INTO  2 PARTS OF 2 CHARACTERS EACH)                  H    7 SRTR   581
C     ALSO PRINTS OUT SORTED TIME CDS                                          H    8 SRTR   582
C     TAPE7 ---SYNOPSIS OF TAPE8. DOES NOT HAVE PRINT OUT OF TIME CDS          H    9 SRTR   583
C     ***********************************************************************  H   10 SRTR   584
      DIMENSION IN(9), MT(5), DUM(8)                                           H   11 SRTR   585
      COMMON /PARM/ INA                                                        H   12 SRTR   586
      COMMON /ZIP/ M1,J1,M4,M3,M2,J2,IHR,J3,MD,ICD(300),ND(300),NI(300),       H   13 SRTR   587
     1IF(300),KI,NCPA,NPA(10),NPP(10),IACCT(50,10),IPROJ(50,10),NCT(10)        H   14 SRTR   588
      COMMON A(8,250),B(8,250),KEYA(5,250),KEYB(5,250)                         H   15 SRTR   589
      DIMENSION IARR(3,200)                                                    H   16 SRTR   590
      INTEGER SUBCRP(200)                                                      H   17 SRTR   591
      EQUIVALENCE (IN,M1)                                                      H   18 SRTR   592
      LOGICAL EOFITP,EOFRC                                                     H   19 SRTR   593
      CALL PGE (0)                                                             H   20 SRTR   594
      CALL PAGE (0)                                                            H   21 SRTR   595
      NPA=0                                                                    H   22 SRTR   596
      DO 1 I=1,5                                                               H   23 SRTR   597
1     MT(I)=0                                                                  H   24 SRTR   598
      LM1=LM2=LM3=LM4=0                                                        H   25 SRTR   599
2     DO 14 JT=1,INA                                                           H   26 SRTR   600
      DECODE (34,29,A(1,JT) )IN                                                H   27 SRTR   601
C     COMPUTE OVERTIME                                                         H   28 SRTR   602
      DECODE (3,30,A(4,JT) )IOVERT                                             H   29 SRTR   603
      IK=0                                                                     H   30 SRTR   604
C     ACCOUNT NO.  PART 1                                                      H   31 SRTR   605
      IF (LM4.NE.M4) GO TO 3                                                   H   32 SRTR   606
C     ACCOUNT NO.  PART 2                                                      H   33 SRTR   607
      IF (LM3.NE.M3) GO TO 4                                                   H   34 SRTR   608
C     PROJECT NO.                                                              H   35 SRTR   609
      IF (LM2.NE.M2) GO TO 5                                                   H   36 SRTR   610
C     EMPLOYEE NO.                                                             H   37 SRTR   611
      IF (LM1.EQ.M1) 10,6                                                      H   38 SRTR   612
3     IK=IK+1                                                                  H   39 SRTR   613
4     IK=IK+1                                                                  H   40 SRTR   614
5     IK=IK+1                                                                  H   41 SRTR   615
6     IK=IK+1                                                                  H   42 SRTR   616
      IF (IK.EQ.1) GO TO 8                                                     H   43 SRTR   617
C     WRITE OUT HRS SPENT ON EACH ACCT,PROJ PAIR                               H   44 SRTR   618
      CALL PGE (1)                                                             H   45 SRTR   619
      WRITE (7,36) (MT(I),I=2,IK)                                              H   46 SRTR   620
      IF (NPA.EQ.0) GO TO 7                                                    H   47 SRTR   621
C        TOTAL HRS OF ACCT/PROJ                                                H   48 SRTR   622
      IARR(3,NPA)=MT(2)                                                        H   49 SRTR   623
7     NPA=NPA+1                                                                H   50 SRTR   624
C        PACK ACCT                                                             H   51 SRTR   625
```

Table 4.--CAN 2 computer program module 2--program SRTR - Continued

```
      IARR(1,MPA)=M3+LS(M4,12)                                          H  52 SRTR   626
C        SAVE PROJ                                                      H  53 SRTR   627
      IARR(2,MPA)=M2                                                    H  54 SRTR   628
C     WRITE OUT AACT,PROJ PAIR                                          H  55 SRTR   629
      CALL PGE (2)                                                      H  56 SRTR   630
      WRITE (7,31) M4,M3,M2                                             H  57 SRTR   631
C     WRITE OUT HRS SPENT ON EACH ACCT,PROJ PAIR BY EACH EMPLOYEE       H  58 SRTR   632
8     CALL PAGE (1)                                                     H  59 SRTR   633
      WRITE (8,34) (MT(I),I=1,IK)                                       H  60 SRTR   634
C     ZERO OUT SPECIFIC FIELDS                                          H  61 SRTR   635
      DO 9 I=1,IK                                                       H  62 SRTR   636
9     MT(I)=0                                                           H  63 SRTR   637
C     TOTAL HRS                                                         H  64 SRTR   638
10    DO 11 I=1,5                                                       H  65 SRTR   639
11    MT(I)=MT(I)+IHR+IOVERT                                            H  66 SRTR   640
C     GET EMPLOYEE NAME FROM EMPLOYEE TABLE BY COMPARING EMPLOYEE NUMBER H  67 SRTR   641
      DO 12 J=1,KI                                                      H  68 SRTR   642
      IF (IN(1).EQ.ICD(J)) GO TO 13                                     H  69 SRTR   643
12    CONTINUE                                                          H  70 SRTR   644
C     ERROR, NO SUCH EMPLOYEE NO. PRESENT,PUNCH OUT BAD CDS             H  71 SRTR   645
      PUNCH 32, (A(LZ,JT),LZ=1,7)                                       H  72 SRTR   646
      J=300                                                             H  73 SRTR   647
C     WRITE EMPLOYEE NAME AND CORRESPONDING TIME CD                     H  74 SRTR   648
13    CALL PAGE (1)                                                     H  75 SRTR   649
      WRITE (8,33) ND(J),NI(J),IF(J),IN                                 H  76 SRTR   650
C     SAVE PREVIOUS TIME CD                                             H  77 SRTR   651
      LM1=M1                                                            H  78 SRTR   652
      LM2=M2                                                            H  79 SRTR   653
      LM3=M3                                                            H  80 SRTR   654
      LM4=M4                                                            H  81 SRTR   655
14    CONTINUE                                                          H  82 SRTR   656
      INA=0                                                             H  83 SRTR   657
C     READ NEXT BLOCK OF TIME CDS                                       H  84 SRTR   658
      EOFITP=EOFRC(ITP,OUM)                                             H  85 SRTR   659
      IF (EOFITP) 15,2                                                  H  86 SRTR   660
C     WRITE SUM TOTAL HRS OF ALL ACCT ,PROJ PAIRS ON BOTH TAPES         H  87 SRTR   661
15    CALL PAGE (1)                                                     H  88 SRTR   662
      WRITE (8,34) MT                                                   H  89 SRTR   663
      WRITE (8,35)                                                      H  90 SRTR   664
      CALL PGE (1)                                                      H  91 SRTR   665
      WRITE (7,36) (MT(I),I=2,5)                                        H  92 SRTR   666
C        TOTAL HRS OF ACCT/PROJ                                         H  93 SRTR   667
      IARR(3,MPA)=MT(2)                                                 H  94 SRTR   668
      IF (NCPA.EQ.0) GO TO 25                                           H  95 SRTR   669
      WRITE (7,26)                                                      H  96 SRTR   670
      DO 24 I=1,NCPA                                                    H  97 SRTR   671
      N=NCT(I)                                                          H  98 SRTR   672
      JSUB=GRANT=0                                                      H  99 SRTR   673
      DO 16 J=1,MPA                                                     H 100 SRTR   674
      IF (NPA(I).EQ.IARR(1,J).AND.NPP(I).EQ.IARR(2,J)) GO TO 17         H 101 SRTR   675
16    CONTINUE                                                          H 102 SRTR   676
      GO TO 24                                                          H 103 SRTR   677
17    WRITE (7,27) (IARR(L,J),L=1,3)                                    H 104 SRTR   678
      DO 22 L=1,N                                                       H 105 SRTR   679
      IF (IACCT(L,I).EQ.4R     )GO TO 28                                H 106 SRTR   680
      DO 18 K=1,MPA                                                     H 107 SRTR   681
      IF (IARR(1,K).EQ.IACCT(L,I).AND.IARR(2,K).EQ.IPROJ(L,I)) GO TO 19 H 108 SRTR   682
18    CONTINUE                                                          H 109 SRTR   683
      GO TO 22                                                          H 110 SRTR   684
19    JSUB=JSUB+1                                                       H 111 SRTR   685
      GRANT=GRANT+IARR(3,K)                                             H 112 SRTR   686
      SUBCRP(JSUB)=K                                                    H 113 SRTR   687
      GO TO 22                                                          H 114 SRTR   688
20    DO 21 K=1,MPA                                                     H 115 SRTR   689
      IF (IARR(2,K).NE.IPROJ(L,I)) GO TO 21                             H 116 SRTR   690
      JSUB=JSUB+1                                                       H 117 SRTR   691
      SUBCRP(JSUB)=K                                                    H 118 SRTR   692
      GRANT=GRANT+IARR(3,K)                                             H 119 SRTR   693
21    CONTINUE                                                          H 120 SRTR   694
22    CONTINUE                                                          H 121 SRTR   695
      IF (GRANT.EQ.0) GO TO 24                                          H 122 SRTR   696
      DO 23 K=1,JSUB                                                    H 123 SRTR   697
      M=SUBCRP(K)                                                       H 124 SRTR   698
      RATE=IARR(3,J)*(IARR(3,M)/GRANT)                                  H 125 SRTR   699
      WRITE (7,28) (IARR(N,M),N=1,2),RATE                               H 126 SRTR   700
23    CONTINUE                                                          H 127 SRTR   701
24    CONTINUE                                                          H 128 SRTR   702
25    WRITE (7,35)                                                      H 129 SRTR   703
      RETURN                                                            H 130 SRTR   704
```

Table 4.--CAN 2 computer program module 2--program SRTR - Concluded

```
C                                                                               H 131 SRTR   705
26     FORMAT (1H1)                                                             H 132 SRTR   706
27     FORMAT (1H ,//,10X,24HPRORATED ACCOUNT/PROJECT,4X,R4,1H-,R4,12H TO       H 133 SRTR   707
     1TAL HOURS,I7,/)                                                           H 134 SRTR   708
28     FORMAT (13X,R4,1H-,R4,5X,12HPRORATED HRS,F9.1)                           H 135 SRTR   709
29     FORMAT (R9,R8,2R2,R4,R4,I2,R2,R1)                                        H 136 SRTR   710
30     FORMAT (1X,I2)                                                           H 137 SRTR   711
31     FORMAT (/,1X,R2,1X,R2,1X,R4)                                             H 138 SRTR   712
32     FORMAT (7A10,8X,2H01)                                                    H 139 SRTR   713
33     FORMAT (1X,A10,A4,1X,A2,2X,R9,2X,R8,2X,2R2,2X,R4,1X,R4,2X,I2,3X,R2       H 140 SRTR   714
     1,1X,R1)                                                                   H 141 SRTR   715
34     FORMAT (68X,I4,1H*,I7,2H**,I7,3H***,I7,4H****,I8,5H*****)                H 142 SRTR   716
35     FORMAT (9H1ENDOFJOB)                                                     H 143 SRTR   717
36     FORMAT (11X,I7,2H**,I7,3H***,I7,4H****,I8,5H*****)                       H 144 SRTR   718
       END                                                                      H 145-SRTR   719
       SUBROUTINE PAGE (N)                                                      I   1 SRTR   720
C      ***************************************************************          I   2 SRTR   721
       DATA NPAGE,LINE/0,49/                                                    I   3 SRTR   722
1      IF (N) 4,2,5                                                             I   4 SRTR   723
2      IF (LINE) 4,4,3                                                          I   5 SRTR   724
3      NPAGE=NPAGE+1                                                            I   6 SRTR   725
       WRITE (8,6)                                                              I   7 SRTR   726
       LINE=0                                                                   I   8 SRTR   727
4      RETURN                                                                   I   9 SRTR   728
5      LINE=LINE+N                                                              I  10 SRTR   729
       IF (LINE-49) 4,3,3                                                       I  11 SRTR   730
C                                                                               I  12 SRTR   731
6      FORMAT (1H1,////,8X,4HNAME,11X,6HE. NO.,4X,4HDATE,4X,4HACT.,1X,4HP      I  13 SRTR   732
     1ROJ,2X,4HWORK,1X,3HREG,2X,3HOVT,1X,1HW,2X,7HEMPLOY.,3X,5HPROJ.,6X,       I  14 SRTR   733
     24HACT.,5X,4HACT.,7X,5HTOTAL,/,42X,3HNO.,2X,3HNO.,2X,4HCODE,1X,3HHR       I  15 SRTR   734
     3S,2X,3HHRS,1X,1HA,1X,8HSUBTOTAL,3X,5HTOTAL,2X,8HSUBTOTAL,4X,5HTOTA       I  16 SRTR   735
     4L,5X,8HDISTRICT,/,66X,1HE,3X,5HHOURS,4X,5HHOURS,5X,5HHOURS,4X,5HHO       I  17 SRTR   736
     5URS,7X,5HHOURS,/)                                                         I  18 SRTR   737
       END                                                                      I  19-SRTR   738
       SUBROUTINE PGE (N)                                                       J   1 SRTR   739
C      ***************************************************************          J   2 SRTR   740
       DATA NPAGE,LINE/0,49/                                                    J   3 SRTR   741
1      IF (N) 4,2,5                                                             J   4 SRTR   742
2      IF (LINE) 4,4,3                                                          J   5 SRTR   743
3      NPAGE=NPAGE+1                                                            J   6 SRTR   744
       WRITE (7,6)                                                              J   7 SRTR   745
       LINE=0                                                                   J   8 SRTR   746
4      RETURN                                                                   J   9 SRTR   747
5      LINE=LINE+N                                                              J  10 SRTR   748
       IF (LINE-49) 4,3,3                                                       J  11 SRTR   749
C                                                                               J  12 SRTR   750
6      FORMAT (1H1,//,2X,4HACT.,1X,5HPROJ.,3X,5HPROJ.,6X,4HACT.,6X,4HACT.      J  13 SRTR   751
     1,7X,5HTOTAL,/,3X,3HNO.,3X,3HNO.,3X,5HTOTAL,2X,8HSUBTOTAL,6X,5HTOTA       J  14 SRTR   752
     2L,5X,8HDISTRICT,/,15X,5HHOURS,5X,5HHOURS,6X,5HHOURS,6X,5HHOURS,/)        J  15 SRTR   753
       END                                                                      J  16-SRTR   754
```

Table 5.--CAN 2 computer program module 3--program CANST

```
                                                                                    Reference number
      PROGRAM CANST(TAPE9,INPUT,OUTPUT)                                          A    1 CANST    2
      DIMENSION INAM(2)                                                          A    2 CANST    3
      COMMON DA,DB                                                               A    3 CANST    4
      READ 8, DA,DB,IDATE                                                        A    4 CANST    5
      READ (9,9) IEMP,IDT,IACT,IHR,IOV,INAM                                      A    5 CANST    6
1     CALL PAGE (2)                                                              A    6 CANST    7
      PRINT 10, INAM,IEMP                                                        A    7 CANST    8
      INTOT=0                                                                    A    8 CANST    9
      INGTOT=0                                                                   A    9 CANST   10
      IGTOT=0                                                                    A   10 CANST   11
      ITOT=0                                                                     A   11 CANST   12
      GO TO 4                                                                    A   12 CANST   13
2     READ (9,9) ITMP,IDT,IMCT,IHR,IOV,INAM                                      A   13 CANST   14
      IF (ENDFILE 9) 7,3                                                         A   14 CANST   15
3     IF (ITMP.NE.IEMP) GO TO 6                                                  A   15 CANST   16
      IF (IMCT.NE.IACT) GO TO 5                                                  A   16 CANST   17
4     ITOT=ITOT+IHR+IOV                                                          A   17 CANST   18
      IF (IDT.EQ.IDATE) INTOT=INTOT+IHR+IOV                                      A   18 CANST   19
      GO TO 2                                                                    A   19 CANST   20
5     CALL PAGE (1)                                                              A   20 CANST   21
      PRINT 11, IACT,IACT,ITOT,INTOT                                             A   21 CANST   22
      IACT=IMCT                                                                  A   22 CANST   23
      INGTOT=INGTOT+INTOT                                                        A   23 CANST   24
      INTOT=0                                                                    A   24 CANST   25
      IGTOT=IGTOT+ITOT                                                           A   25 CANST   26
      ITOT=0                                                                     A   26 CANST   27
      GO TO 4                                                                    A   27 CANST   28
6     CALL PAGE (1)                                                              A   28 CANST   29
      PRINT 11, IACT,IACT,ITOT,INTOT                                             A   29 CANST   30
      CALL PAGE (4)                                                              A   30 CANST   31
      INGTOT=INGTOT+INTOT                                                        A   31 CANST   32
      IGTOT=IGTOT+ITOT                                                           A   32 CANST   33
      PRINT 12, IGTOT,INGTOT                                                     A   33 CANST   34
      IEMP=ITMP                                                                  A   34 CANST   35
      IACT=IMCT                                                                  A   35 CANST   36
      GO TO 1                                                                    A   36 CANST   37
7     CALL PAGE (1)                                                              A   37 CANST   38
      PRINT 11, IACT,IACT,ITOT,INTOT                                             A   38 CANST   39
      CALL PAGE (4)                                                              A   39 CANST   40
      INGTOT=INGTOT+INTOT                                                        A   40 CANST   41
      IGTOT=IGTOT+ITOT                                                           A   41 CANST   42
      PRINT 12, IGTOT,INGTOT                                                     A   42 CANST   43
C                                                                                A   43 CANST   44
8     FORMAT (2A10,1X,A2)                                                        A   44 CANST   45
9     FORMAT (R9,2X,A2,4X,A8,4X,2I2,7X,2A10)                                     A   45 CANST   46
10    FORMAT (3X,2A10,4X,7HEMP NO.,2X,R9,/)                                      A   46 CANST   47
11    FORMAT (4X,A4,1H-,R6,I5,5H HRS.,1X,I5,5H HRS.)                             A   47 CANST   48
12    FORMAT (15X,5H-----,6X,5H-----,/,13X,I7,5H HRS.,1X,I5,5H HRS.,/)           A   48 CANST   49
      END                                                                        A   49-CANST   50
      SUBROUTINE PAGE (J)                                                        B    1 CANST   51
      COMMON DA,DB                                                               B    2 CANST   52
      DATA N/62/                                                                 B    3 CANST   53
      N=N+J                                                                      B    4 CANST   54
      IF (N.GT.62) GO TO 1                                                       B    5 CANST   55
      RETURN                                                                     B    6 CANST   56
1     PRINT 2, DA,DB                                                             B    7 CANST   57
      N=J+4                                                                      B    8 CANST   58
      RETURN                                                                     B    9 CANST   59
C                                                                                B   10 CANST   60
2     FORMAT (1H1,/,48X,15HEMPLOYEE REPORT,2X,A10,2HTO,A10,/,4X,9HACCT-P         B   11 CANST   61
     1ROJ,3X,4HYEAR,6X,5HMONTH,/)                                                B   12 CANST   62
      END                                                                        B   13-CANST   63
```

Table 6.--Summary of work effort by employee within account and project

NAME		E. NO.	DATE	ACT. NO.	PROJ NO.	WORK CODE	REG HRS	OVT HRS	W A E	EMPLOY. SUBTOTAL HOURS	PROJ. TOTAL HOURS	ACT. SUBTOTAL HOURS	ACT. TOTAL HOURS	TOTAL DISTRICT HOURS
SMITH	FP	003320283	710215	00	0	10LX	8							
SMITH	FP	003320283	710319	00	0	1ALX	2							
										151*				
JONES	EL	079076457	700701	00	0	1ALX	4							
JONES	EL	079076457	700703	00	0	10LX	8							
BROWN	LC	525981827	700818	01	001	CSGE	4							
BROWN	LC	525981827	700818	01	001	CSGF	4							
										8*	177**			
DOE	WK	819200417	700717	01	031	A1X0	8							
DOE	WK	819200417	700824	01	031	A1X0	4							
										12*				
BLACK	CC	414320754	700701	01	031	CSGF	2							
JOHNSON	HM	350181222	700722	14SG	042	ADR0	6							
JOHNSON	HM	350181222	700818	14SG	042	ADR0	8							
										50*				
BRUMLEY	ML	855385073	70071314	14SG	042	ARP0	12		1					
BRUMLEY	ML	855385073	70080507	14SG	042	ARP0	16		1					
										28*	565**	565***		
JONES	EL	079076457	700701	14SI	031	AMP0	4							
JONES	EL	079076457	70072224	14SI	031	ACK0	24							

Table 6.--Summary of work effort by employee within account and project - Continued

NAME		E. NO.	DATE	ACT. NO.	PROJ NO.	WORK CODE	REG HRS	OVT HRS	W A E	EMPLOY. SUBTOTAL HOURS	PROJ. TOTAL HOURS	ACT. SUBTOTAL HOURS	ACT. TOTAL HOURS	TOTAL DISTRICT HOURS
SMYTH	WA	029050846	71032930	14S	073	CLRO	15							
SMYTH	WA	029050846	710331	14S	073	CLRO	8							
										423*				
BOST	FC	504067899	71010408	14S	073	CPTF	16							
BOST	FC	504067899	710111	14S	073	CPTF	8							
										24*				
VIGIL	PR	255725939	710119	14S	073	CCOF	8							
										8*				
BAILEY	AE	855408153	710119	14S	073	CCOF	7		1					
										7*	462**	22613***	55087****	
KLEM	RW	540563387	700724	15	031	CSGF	3							
BRUMLEY	ML	855385073	70101214	20SW	0	ARPO	12		1					
										14*				
BAILEY	AE	855408153	701127	20SW	0	CMAS	8		1					
BAILEY	AE	855408153	70122224	20SW	0	CSGO	23		1					
BAILEY	AE	855408153	710226	20SW	0	CMAS	8		1					
										63*	1498**	1498***		
HAZARD	WE	657052028	70081014	20WH	0	ACFF	40							
HAZARD	WE	657052028	70081720	20WH	0	ACFF	32							
										72*	72**	72***		

Table 6.--Summary of work effort by employee within account and project - Concluded

NAME		E. NO.	DATE	ACT. NO.	PROJ NO.	WORK CODE	REG HRS	OVT HRS	W A E	EMPLOY. SUBTOTAL HOURS	PROJ. TOTAL HOURS	ACT. SUBTOTAL HOURS	ACT. TOTAL HOURS	TOTAL DISTRICT HOURS
MARTINEZ	JW	505605597	700820	20WY	0	CTRE	8							
MARTINEZ	JW	505605597	70082428	20WY	0	CGMF	40							
MARTINEZ	JW	505605597	700831	20WY	0	CGMO	8							
										56*	56**	56***	13271****	
DAVIDSON	BM	253447116	700811	21	034	CCLE	3							
DAVIDSON	BM	253447116	700811	21	034	CCLF	3							
										6*				
ORTEGA	JE	255647171	700717	21	034	CCLL	4							
CASSEY	IB	151109292	710315	31	068	AXXO	4							
CASSEY	IB	151109292	710318	31	068	AXXO	4							
CASSEY	IB	151109292	710319	31	068	AXXO	3							
CASSEY	IB	151109292	710329	31	068	APLO	2							
										208*				
THAXTON	RB	255100476	710202	31	068	ATTO	3							
										3*				
JOHNSON	HM	350181222	701208	31	068	ADRO	1							
										1*				
HAZARD	WE	657052028	710222	31	068	ACFO	4							
										4*	222**	222***	222****	117548*****

Table 7--Summary of work effort by account and project

ACT. NO.	PROJ. NO.	PROJ. TOTAL HOURS	ACT. SUBTOTAL HOURS	ACT. TOTAL HOURS	TOTAL DISTRICT HOURS
00	0	24430**	24430***	24430****	
01	001	177**			
01	031	3153**			
01	034	1167**			
01	063	122**			
01	084	2642**			
01	085	28**			
.01	090	12**	7301***	7301****	
02	031	731**	731***	731****	
14 S	072	1099**			
14S	073	462**	22613***	55087****	
15	031	61**			
20 SW	0	1498**	1498***		
20 WH	0	72**	72***		

Table 7.--Summary of work effort by account and project - Concluded

ACT. NO.	PROJ. NO.	PROJ. TOTAL HOURS	ACT. SUBTOTAL HOURS	ACT. TOTAL HOURS	TOTAL DISTRICT HOURS
20 WY	0	56**	56***	13271****	
21	034	154**	154***	154****	
24	008	1264**			
24	076	285**	1549***	1549****	
31	068	222**	222***	222****	117548*****

Table 8.--Summary of prorated work effort by account and project

PRORATED ACCOUNT/PROJECT	20GI-0	TOTAL HOURS	1846
01 -001	PRORATED HRS		10.9
14S -001	PRORATED HRS		270.2
14P -013	PRORATED HRS		77.3
09 -015	PRORATED HRS		141.5
09 -016	PRORATED HRS		44.1
14S -017	PRORATED HRS		94.1
26R -053	PRORATED HRS		5.4
14S -055	PRORATED HRS		84.6
14S -056	PRORATED HRS		20.9
28 -057	PRORATED HRS		35.8
14S -059	PRORATED HRS		39.9
14S -060	PRORATED HRS		92.4
PRORATED ACCOUNT/PROJECT	20SW-0	TOTAL HOURS	1498
01 -031	PRORATED HRS		177.4
02 -031	PRORATED HRS		41.1
06 -031	PRORATED HRS		2.2
07 -031	PRORATED HRS		27.9
14AL-031	PRORATED HRS		13.5
14C -031	PRORATED HRS		69.9
14P -031	PRORATED HRS		172.1
14SI-031	PRORATED HRS		855.6
15 -031	PRORATED HRS		4.6
16 -031	PRORATED HRS		1.6
18 -031	PRORATED HRS		128.7
20LL-031	PRORATED HRS		3.5
PRORATED ACCOUNT/PROJECT	20CL-0	TOTAL HOURS	2824
01 -034	PRORATED HRS		494.5
11 -034	PRORATED HRS		28.4
12 -034	PRORATED HRS		20.8
13 -034	PRORATED HRS		572.0
141 -034	PRORATED HRS		1126.6
14P -034	PRORATED HRS		229.6
14S -034	PRORATED HRS		41.1
20A -034	PRORATED HRS		245.7
21 -034	PRORATED HRS		65.3

Table 8.--Summary of prorated work effort by account and project - Concluded

PRORATED ACCOUNT/PROJECT	20SL-0	TOTAL HOURS	1573
01 -084	PRORATED HRS	592.6	
13 -084	PRORATED HRS	4.9	
141 -084	PRORATED HRS	914.0	
14P -084	PRORATED HRS	5.6	
18 -084	PRORATED HRS	9.0	
20A -084	PRORATED HRS	46.9	
PRORATED ACCOUNT/PROJECT	20CN-0	TOTAL HOURS	822
01 -001	PRORATED HRS	1.8	
14S -001	PRORATED HRS	44.2	
14S -004	PRORATED HRS	5.8	
24 -008	PRORATED HRS	12.8	
14P -013	PRORATED HRS	12.6	
09 -015	PRORATED HRS	23.1	
09 -016	PRORATED HRS	7.2	
14S -017	PRORATED HRS	15.4	
14S -018	PRORATED HRS	33.3	
14S -028	PRORATED HRS	58.1	
20C -090	PRORATED HRS	.1	
15 -091	PRORATED HRS	10.3	
20PS-096	PRORATED HRS	.5	
25 -099	PRORATED HRS	3.6	

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Table 9.--Summary of work effort by employee

EMPLOYEE REPORT 01 JUL 71 TO 01 FEB 72

ACCOUNT/PROJECT	YEAR	MONTH
FINDER	GM	EMP NO. 558485175
23 -307	403 HRS	39 HRS
	403 HRS	39 HRS
FLUGGER	AM	EMP NO. 562544184
01 -001	4 HRS	4 HRS
07 -001	1 HRS	1 HRS
14SI-001	79 HRS	71 HRS
18 -001	11 HRS	11 HRS
20SW-	24 HRS	12 HRS
23 -109	4 HRS	0 HRS
	123 HRS	99 HRS
FORESTER	DE	EMP NO. 552881817
00 -	138 HRS	7 HRS
01 -004	240 HRS	40 HRS
04 -400	32 HRS	0 HRS
141 -004	661 HRS	121 HRS
20GB-	3 HRS	0 HRS
22 -111	8 HRS	0 HRS
31 -300	142 HRS	0 HRS
	1224 HRS	168 HRS
GALE	GJ	EMP NO. 138388708
00 -	12 HRS	8 HRS
14S -101	4 HRS	0 HRS
14S -105	111 HRS	81 HRS
14S -200	868 HRS	72 HRS
	995 HRS	161 HRS
GARNETT	WI	EMP NO. 572149301
00 -	406 HRS	37 HRS
01 -001	41 HRS	7 HRS
14P -001	459 HRS	81 HRS
14P -003	2 HRS	2 HRS
14P -004	1 HRS	0 HRS
14P -107	4 HRS	2 HRS
14SI-001	202 HRS	35 HRS
18 -001	32 HRS	4 HRS
20SW-	77 HRS	0 HRS
	1224 HRS	168 HRS